

Baker

WWS-00109-09.10-12/16/91

Baker Environmental, Inc.
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December 16, 1991

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Commanding Officer
Atlantic Division
Naval Facilities Engineering Command
Norfolk, Virginia 23511-6287

Attn: Ms. Brenda Norton, P.E.
Remedial Project Manager
Engineer-in-Charge
Code 1822

Re: Contract N62470-89-D-4814
CTO-0018 Community Relations Services
Final Site Photograph Album

Dear Ms. Norton:

Baker Environmental, Inc. is pleased to submit this Final Site Photograph Album for the Naval Weapons Station Yorktown, Virginia. As per Appendix A of the negotiated CTO-0018, the following distribution is delivered:

LANTNAVFACENGCOM	1 book
WPNSTA Yorktown	7 books
EPA Region III	1 book
VA Department of Waste Management	1 book

If you have any comments or questions regarding this submittal, please do not hesitate to contact me at (412) 269-2020.

Sincerely,

BAKER ENVIRONMENTAL, INC.



Melissa C. Davidson
Community Relations Specialist

MCD/rw
Enclosure

cc: Mr. Steven Chambliss, P.E. (w/o enclosure)
Mr. Marc Lambert, P.E. (w/o enclosure)
Ms. Nina Johnson, P.E. (w/o enclosure)
Mr. Tom Black (PAO, WPNSTA Yorktown)
Ms. Jamie Walters (VADWM)
Mr. Robert Thomson (EPA Region III)
Ms. Judy Delconte (Weston)

bcc: A.Pajak/C.Homan/CF; W.Trumbath/J.Mentz/PRGM R;
R.Wattras(ck)/M.Davidson/PJF F
S.O. #19018-SRN
Subfile #5

FINAL
SITE PHOTOGRAPH ALBUM
NAVAL WEAPONS STATION YORKTOWN
CONTRACT TASK ORDER 0018

Prepared For:

**NAVAL FACILITIES
ENGINEERING COMMAND
ATLANTIC DIVISION**
Norfolk, Virginia

Under:

Contract N62470-89-D-4814

Prepared By:

BAKER ENVIRONMENTAL, INC.
Coraopolis, Pennsylvania

DECEMBER 16, 1991

Naval Weapons Station Yorktown Installation Restoration Program Site Photograph Album

This photograph album, developed and maintained by the Naval Weapons Station Yorktown (NWS Yorktown), in Yorktown, Virginia presents the Installation Restoration Program (IRP) sites at the Station. These sites are areas where hazardous waste was disposed in the past. The sites are currently under investigation to determine potential threat to human health and the environment and if necessary, environmental cleanup alternatives. Map 1 shows the location of the NWS Yorktown.

Installation Restoration Program History

Over its long history, the NWS Yorktown generated and disposed of a variety of wastes including: solvents, packaging, oils, scrap metal, lumber and missile hardware. NWS Yorktown followed conventional, accepted disposal practices (landfilling) from 1918 until the late 1970s. Many landfills were undeveloped natural depressions filled with debris, then covered and seeded with grasses.

In 1975, the Department of Defense (DoD) began a program to assess past hazardous and toxic materials storage and disposal activities. The goal of this program, the DoD's Installation Restoration Program (IRP), was and is to address uncontrolled hazardous waste sites by mitigating hazards to health and welfare.

In 1981, the DoD's IRP was reissued, with additional responsibilities and authorities delegated to the Secretary of Defense. As a result, the Navy initiated the Navy Assessment and Control of Installation Pollutants (NACIP) Program to comply with DoD's new IRP requirements. The NACIP program utilized a three-phased approach, including an Initial Assessment Study (IAS), Confirmation and Characterization Studies and Remedial Measures.

In order to address Environmental Protection Agency (EPA) laws, the Navy restructured the IRP to match the terminology and structure of the EPA program. The current IRP is consistent with applicable state and federal environmental laws. Figure 1 illustrates the former and current IRP study phases.

IRP Terminology Changes

Former

Initial
Assessment
Study

Confirmation
(Verification)/
Characteriza-
tion(Feasibility)

Remedial
Measures

Current

Preliminary
Assessment/
Site
Investigation
(PA/SI)

Remedial
Investigation/
Feasibility
Study (RI/FS)

Record of
Decision
(ROD)

Remedial
Design /
Remedial
Action
(RD/RA)

Installation Restoration Program Process

The IRP is currently initiated with a Preliminary Assessment/Site Inspection (PA/SI) to identify potential threats to human health or the environment. The next phase, the Remedial Investigation (RI), is designed to analyze contaminants, evaluate possible contaminant migration, and assess human health and environmental risks. A sampling plan is designed and conducted. The resulting data provides an indication of the nature, extent and rate of contaminant migration, as well as additional geologic and hydrogeologic information.

Information collected during the RI is used to evaluate alternatives for remediating the site. This evaluation is referred to as a feasibility study (FS). The purpose of the FS is to define a set of actions that can be taken to mitigate existing or potential impacts to human health or the environment. The "no action" option is also evaluated as a standard to compare the other alternatives and will assess human health and environmental impacts if no remedial measures are taken.

The FS presents a variety of cleanup methods to the Lead Agency, either the State or Federal environmental agency. The Agency then chooses an appropriate method and issues a "Draft Record of Decision" (ROD), explaining the rationale for the chosen remedial alternative. The public then has an opportunity to comment on the Draft ROD. The Agency reviews the comments received and considers any new issues. After this public comment period, a final ROD is issued. Upon completion of the RI/FS phase and approval of the final ROD, the third phase, Remedial Design/Remedial Action (RD/RA) is initiated. The plans for remediation are finalized in the RD. After approval of the construction specifications, RA or cleanup begins.

The IRP at NWS Yorktown

To date, the IRP history at NWS Yorktown has included an Initial Assessment Study (IAS) and Remedial Investigation Interim and Draft Reports. The IAS (1983, NACIP Program) identified 19 potentially contaminated sites. Identification was based on interviews with current and retired NWS Yorktown personnel, historic records search, aerial photograph review and field inspection. The sites were examined for the types of contaminants, possible migration pathways and potential receptors, or areas which may be affected by the site. Of the 19 originally specified sites, it was concluded that 15 pose a sufficient threat to human health or the environment to warrant further investigation. Additionally, one new site has been added to the IRP. Table 2 presents a list of those sites. The sites were grouped together by location, thus they appear in all studies, as well as in this photo album, by area, not by numeric order.

These sites were recommended to be included in a subsequent Confirmation Study. The Confirmation Study was conducted in two phases. Round One, conducted in the winter of 1986, was an initial sampling of environmental media at the 15 identified sites. "Confirmation Study Step 1A (Verification), Round One" (Dames & Moore, 1987) is the resulting report. The activities for this study included installing 26 monitoring wells and collecting groundwater samples from each well; collecting and analyzing 21 surface water samples and 21 bottom sediment samples from the same locations; and collecting and analyzing 26 soil samples.

Round Two of the Study was initiated during November, 1987 and completed in December, 1987. A total of 26 groundwater, 26 surface water, 32 sediment, and 12 soil samples were collected and analyzed during this round of study. Resulting data were presented in "Confirmation Study Step 1A Round Two" (Dames & Moore, 1988).

Following the Confirmation Study sampling stage, a Draft Remedial Investigation Interim Report was prepared by Dames & Moore, dated February, 1989. This report summarized the previous available information and marked the conversion between the previous NACIP program and the new IRP format. Recommendations were provided for further information collection. Versar, Inc., revised this document, incorporating the comments of a Technical Review Committee (TRC) meeting held at NWS Yorktown during 1989. The revised interim report was prepared and submitted on July 1, 1991. Versar summarized available information and provided comments for additional efforts necessary to complete the RI. The report also recommended that Site 18, Building 476 Discharge Location, be removed from the list of sites to study, citing that it does not pose a threat to human health or the environment.

Baker Environmental, Inc., has recently been awarded the contract to continue with the IRP efforts at NWS Yorktown.

Table 2: IRP Site Summary

Site	Name
1	Dudley Road Landfill
2	Turkey Road Landfill
3	Group 16 Magazines Landfill
4	Burning Pad Residue Landfill
5	Surplus Transformer Storage Area
6	Explosive-Contaminated Wastewater Impoundment
7	Plant 3 Explosive-Contaminated Wastewater Discharge Area
8	NEDED Explosive-Contaminated Wastewater Discharge Area
9	Plant 1 Explosive-Contaminated Wastewater Discharge Area
10 *	Felgates Creek Fill Area
11	Abandoned Explosives Burning Pits
12	Barracks Road Landfill
13 *	Building Rubble Disposal Site
14 *	Aviation Field
15 *	Electric Shop Disposal Area
16	West Road Landfill
17	Holm Road Landfill
18	Building 476 Discharge
19	Conveyor Belt Soils at Building 10
21 **	Battery and Drum Disposal Area

* Determined in the Initial Assessment Study as not posing a hazard to human health or the environment. No further study was recommended.

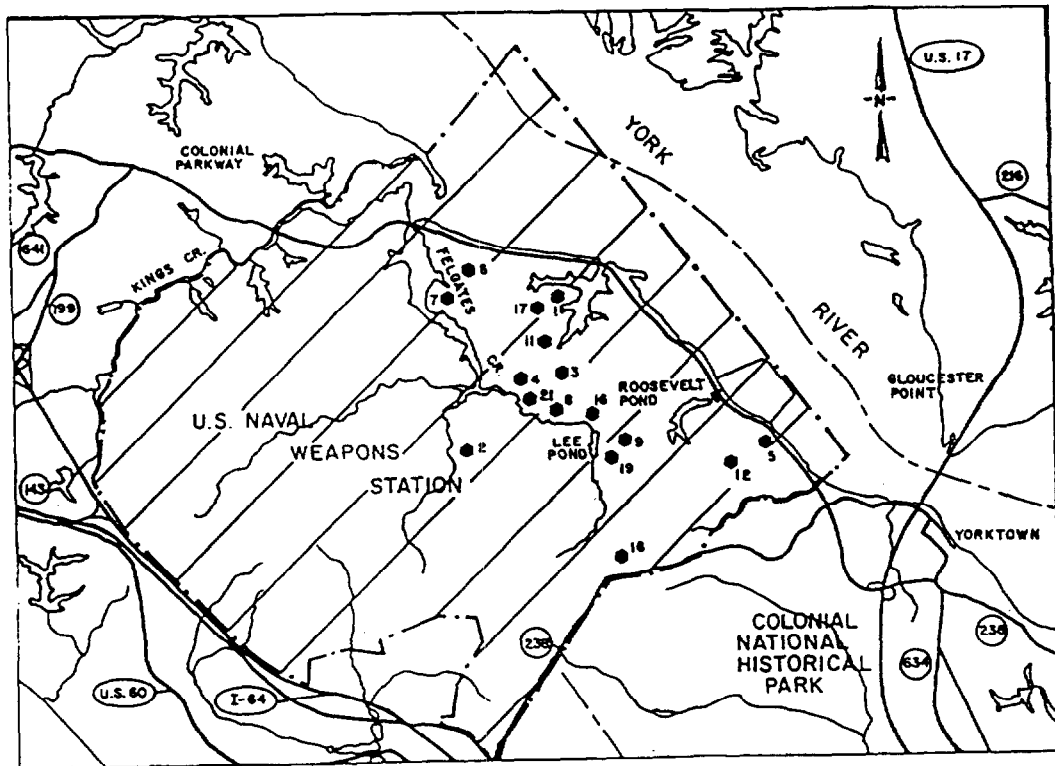
** New site.

These sites will appear grouped together by area, not in numeric order.

Additional Sources of Information

If you would like to learn more about the Installation Restoration Program at the NWS Yorktown, you may review the Community Relations Plan and any of the reports in your local library. The Station contact is Mr. Thomas Black, Public Affairs Officer at the NWS Yorktown (804) 887-4444..

Station Map with Sites Marked

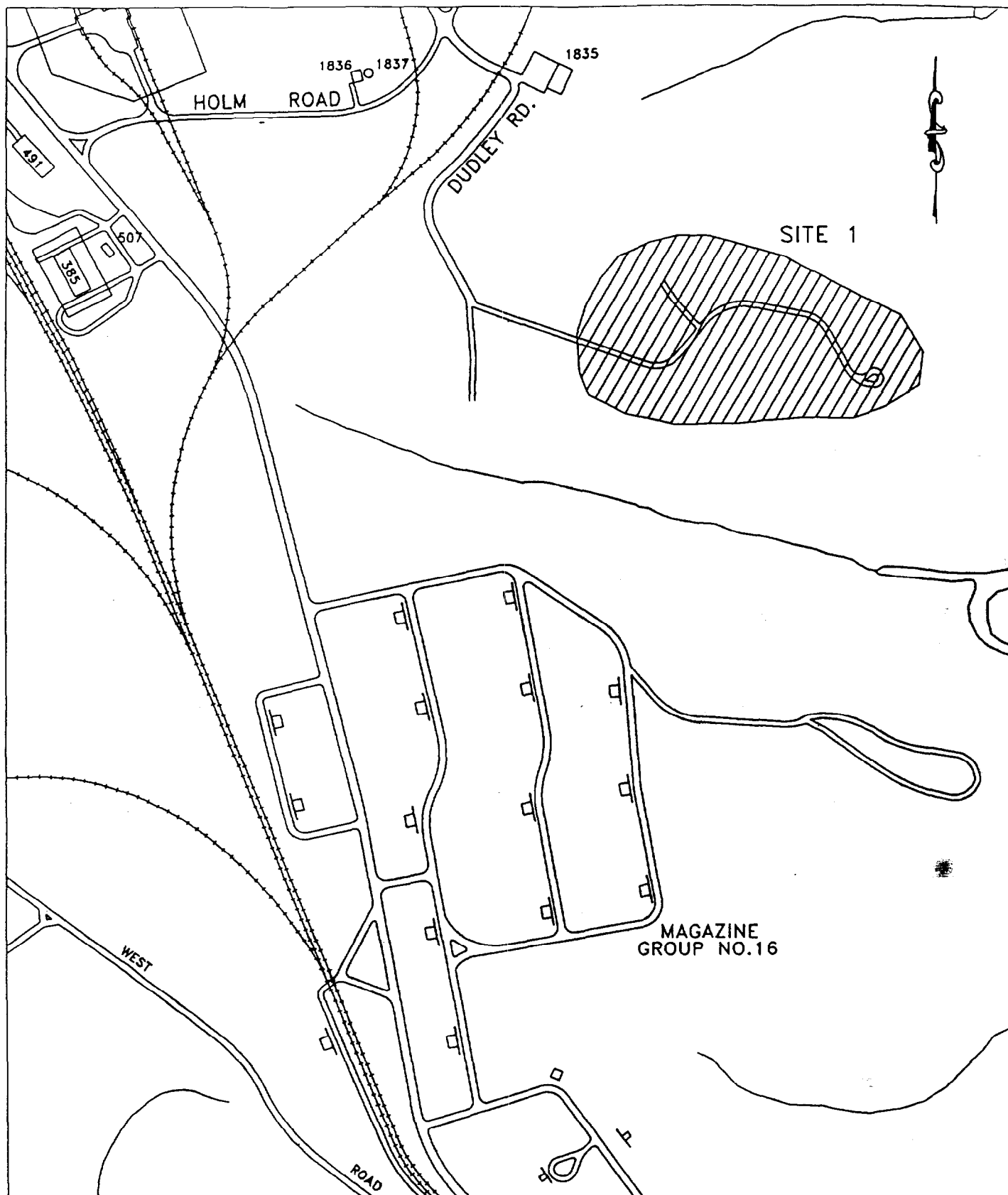


Dudley Road Landfill**Site 1: Dudley Road Landfill**

This 10 acre site was used from about 1965 to 1979 for general disposal. Wastes disposed at the site are reported to have included asbestos from insulation on steam piping, empty oil, grease, paint, and solvent containers (possibly including trichloroethylene, trichloroethane, methylene chloride, acetone, and cyclohexanol), explosive-contaminated carbon, household appliances, scrap metal banding, construction rubble, tree limbs, lumber, packaging wastes, electrical wires, and waste oil. These wastes were estimated at quantities of 17 tons/year for approximately 15 years. One area of the site received plastic lens grinding wastes until 1981 (Naval Weapons Station is the sole Station for manufacturing glasses for military personnel).

The area is now covered with scrub grasses and immature trees. Areas in the vicinity have been used as borrow areas (where soil is removed or "borrowed") to cover the landfill, and have similar vegetative cover. The landfill has a manmade cap (cover), though it is reported to have some pock-marks and sink holes, possibly due to insufficient methane control or insufficient compaction of the dirt cover. Downgradient and northwest of the landfill is a former waste oil pond that was cleaned out and currently is filled with accumulated precipitation. A former sand reclamation pit is also situated near the landfill, but was recently filled with leftover dirt from a railroad track widening process.

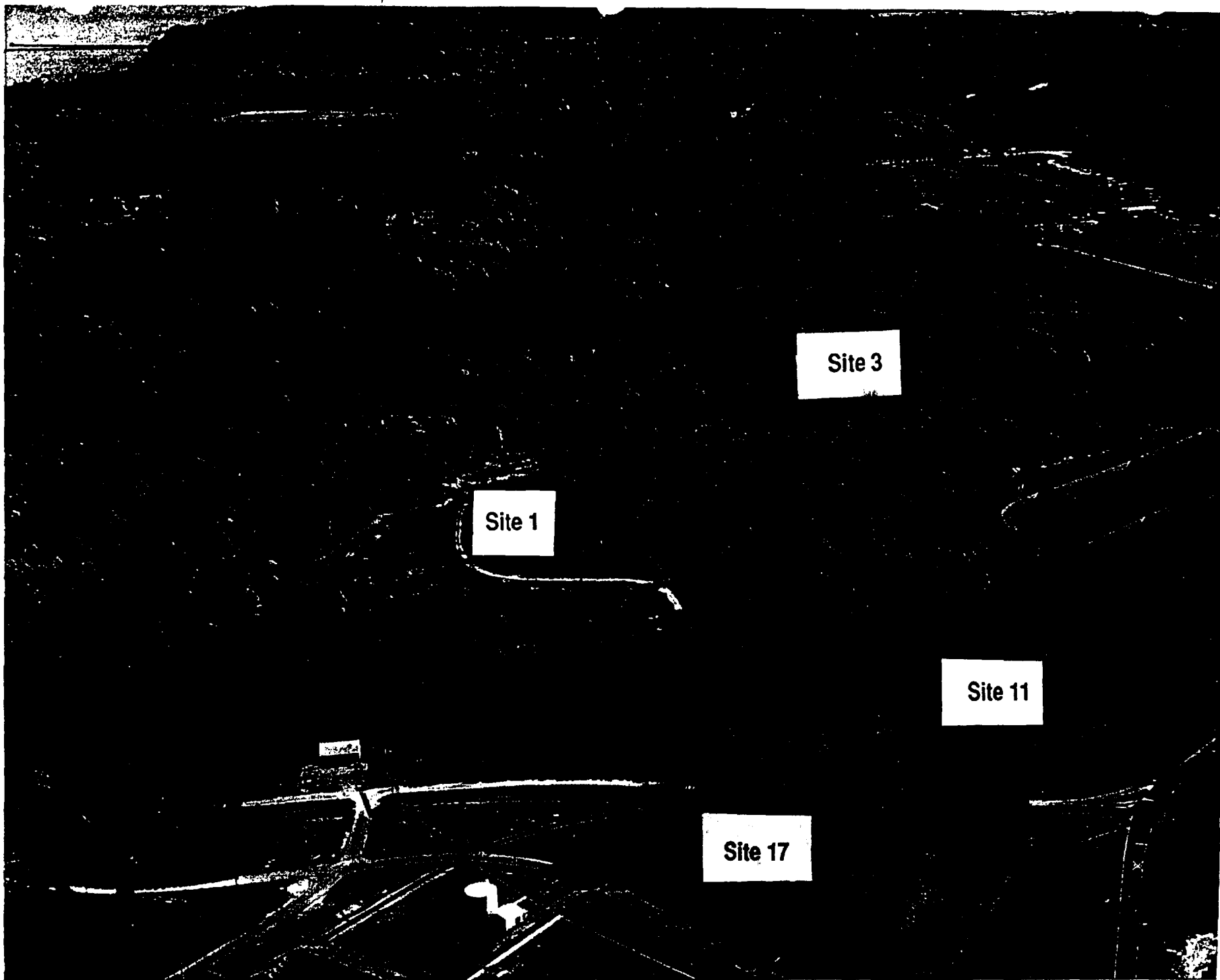
The first photograph, an aerial shot of the Station, illustrates the locations of sites 1,3,11 and 17. (Site 3 is the Group 16 Magazines Landfill; Site 11 is the Abandoned Explosives Burning Pit and Site 17 is the Holm Road Landfill). The aerial illustrates the site location relative to the York River (to the left). The second aerial provides a closer view of the landfill.



NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA
INSTALLATION RESTORATION PROGRAM

SITE 1
DUDLEY ROAD LANDFILL

SCALE: 1" = 300'



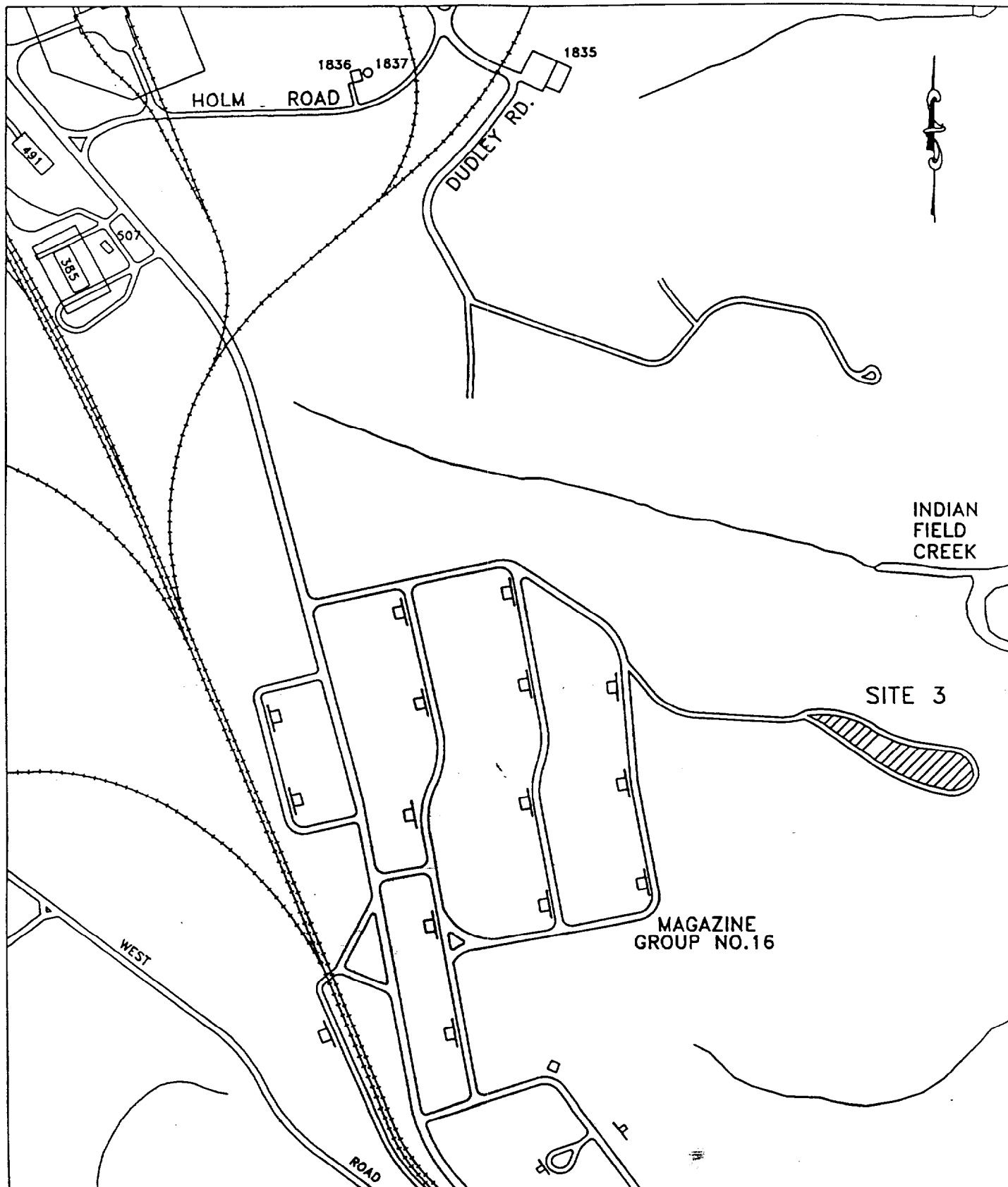
Site 1

Group 16 Magazines Landfill**Site 3: Group 16 Magazines Landfill**

This capped landfill was in use from 1940 to approximately 1970. From field observations, it appears as though the wastes were pushed over a natural embankment, by the creek area, and built up, over time until the landfill reached the access road. Wastes were reported to include solvents (possibly trichloroethylene, trichloroethane, and methylene chloride), sludge from boiler cleaning operations, grease trap wastes, Imhoff tank skimmings containing oil and grease, and dead animals. Approximately 3 tons/year were estimated to have been dumped over this landfill's 30-year use.

The vegetative cover in the dump area consists of grasses and young trees. Surrounding the fill area is mature forest cover. The actual boundaries of the landfill are not easy to define, despite the disturbed areas. There is little evidence of the existence of the dump due to the cover; however, some scrap sheet metal is visible in the grass. A nearby channel of Indian Field Creek is the surface runoff receptor for the site. It is assumed that the groundwater flow direction is also towards Indian Field Creek.

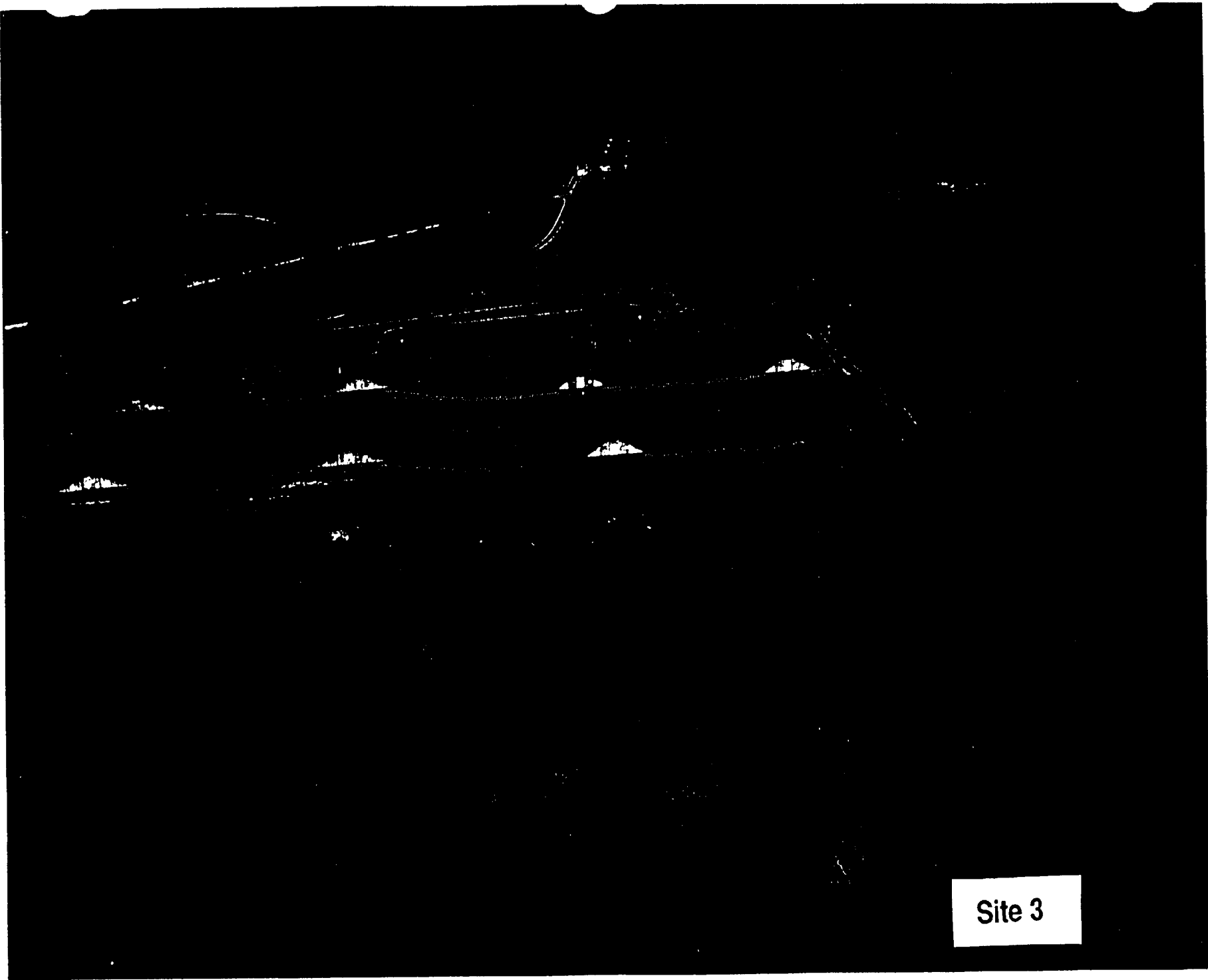
In the aerial photograph, Site 3 is in the lower right hand corner. The small clearing in the mature forest area is visible. The next four shots provide a closer view of the area.



NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA
INSTALLATION RESTORATION PROGRAM

SITE 3
GROUP 16 MAGAZINES LANDFILL

SCALE: 1" = 300'



Site 3



NWS-00109-09.10-12/16/91



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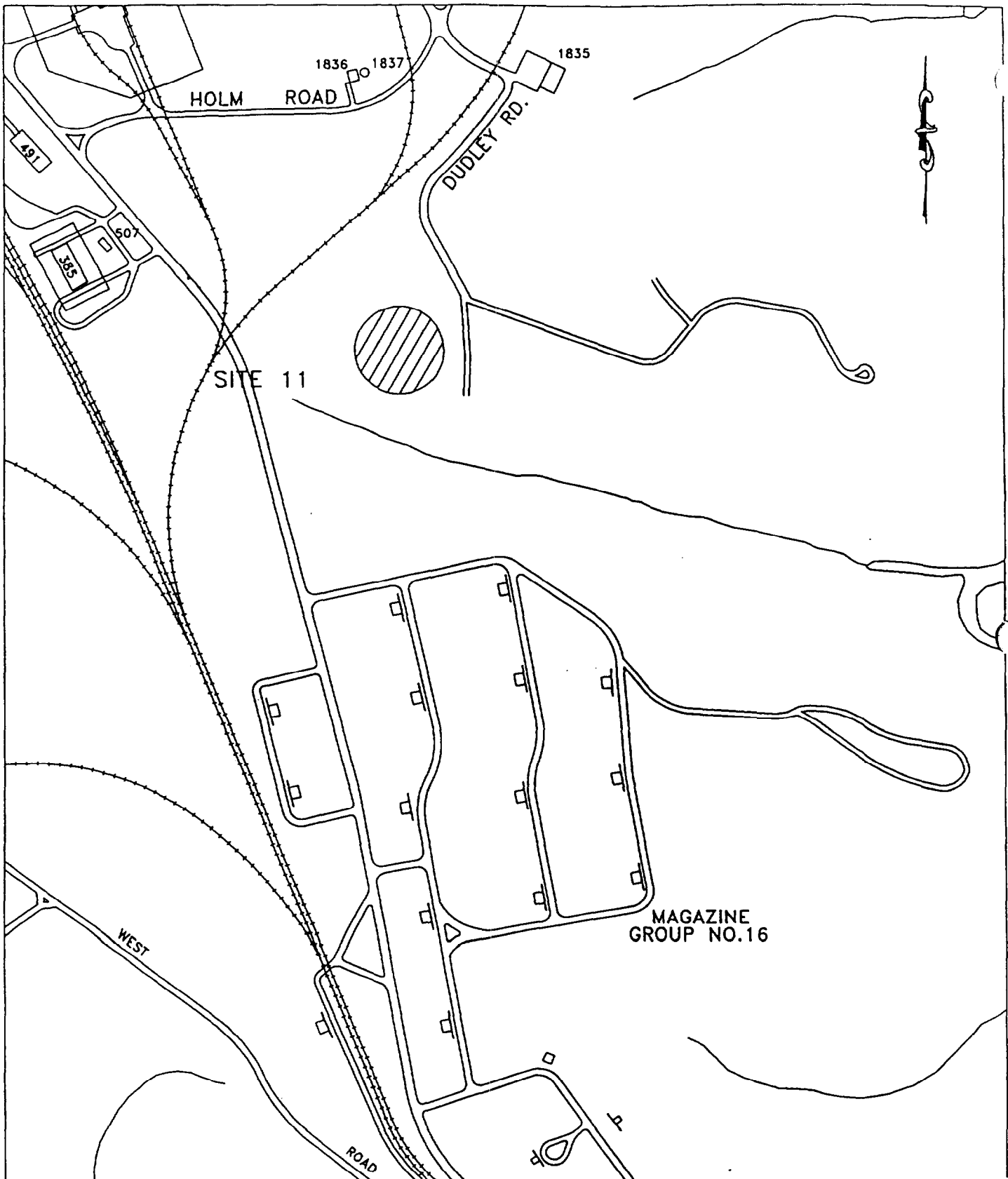


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Abandoned Explosives Burning Pits**Site 11: Abandoned Explosives Burning Pits**

This approximate 0.5 acre area has a 20 year history of burning ordnance and ordnance-contaminated wastes, from 1930 to 1950. Ashes and residues from the open burning of TNT, RDX, and HMX wastes, contaminated wastes, and contaminated sludges are suspected to be present at the site. An estimated 200 pounds of explosive waste residues may have been disposed at this site. The site is forested with pines and brush such that the actual boundaries are difficult to ascertain.

The following photograph illustrates the clearing in the woods, where recent growth delineates the explosives burning pits.



NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA
INSTALLATION RESTORATION PROGRAM

SITE 11
ABANDONED EXPLOSIVES BURNING PIT

SCALE: 1" = 300'



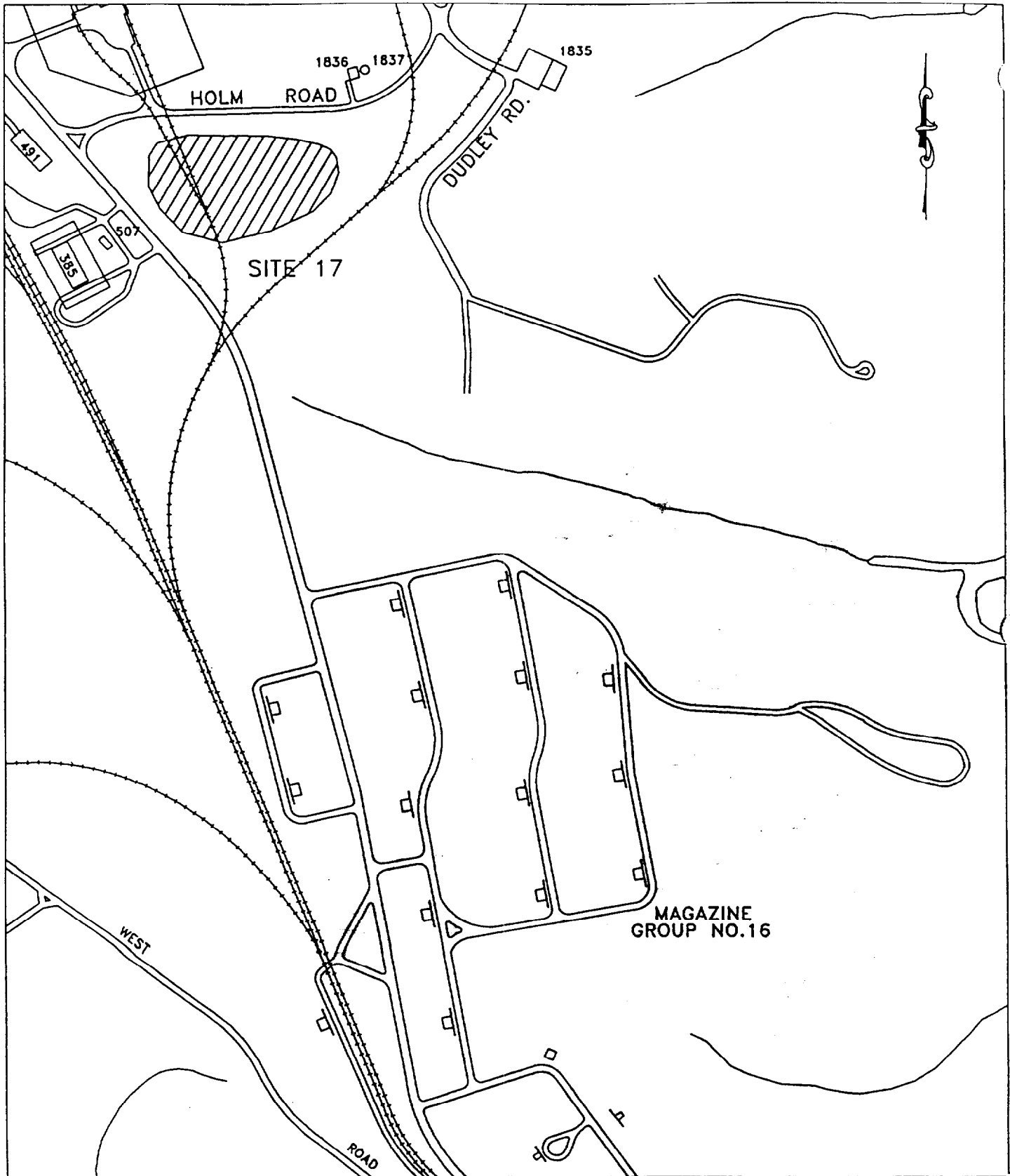
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Holm Road Landfill**Site 17: Holm Road Landfill**

This uncapped (no record of cap construction) landfill is approximately 250 by 100 yards, and was used for approximately 10 years, from the 1950s to the 1960s. Acid batteries from underwater weapons, hydraulic fluids (Doloconik) from the demilling of torpedoes, drums from the Public Works Department and ordnance production shops, and scrap metal reportedly were dumped at this site. Quantities were estimated at 6 tons/year and may include approximately 200 drums and several thousand batteries.

Recent field inspection could not support the previous report (1984 IAS) of numerous drums on site. No visible waste was observed. Vegetative cover is mature trees which delineated the landfill boundary. Groundwater flow is eastward to a tributary of Indian Field Creek. Surface water drainage is assumed to be primarily northward, towards a tributary of Indian Field Creek, and will be confirmed at a later date.

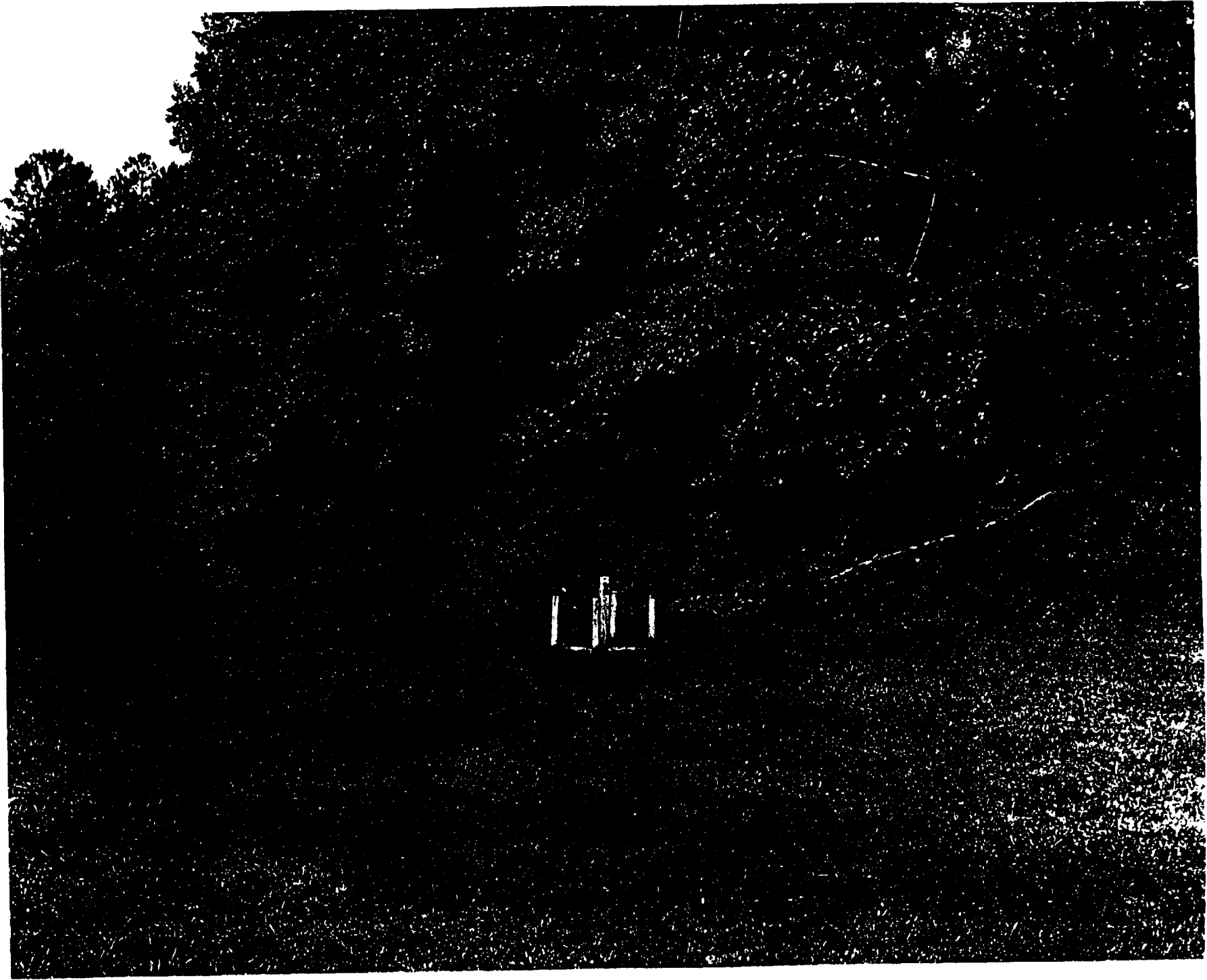
This photograph is of a monitoring well adjacent to the site.



NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA
INSTALLATION RESTORATION PROGRAM

SITE 17
HOLM ROAD LANDFILL

SCALE: 1" = 300'



NWS-00109-09.10-12/16/91

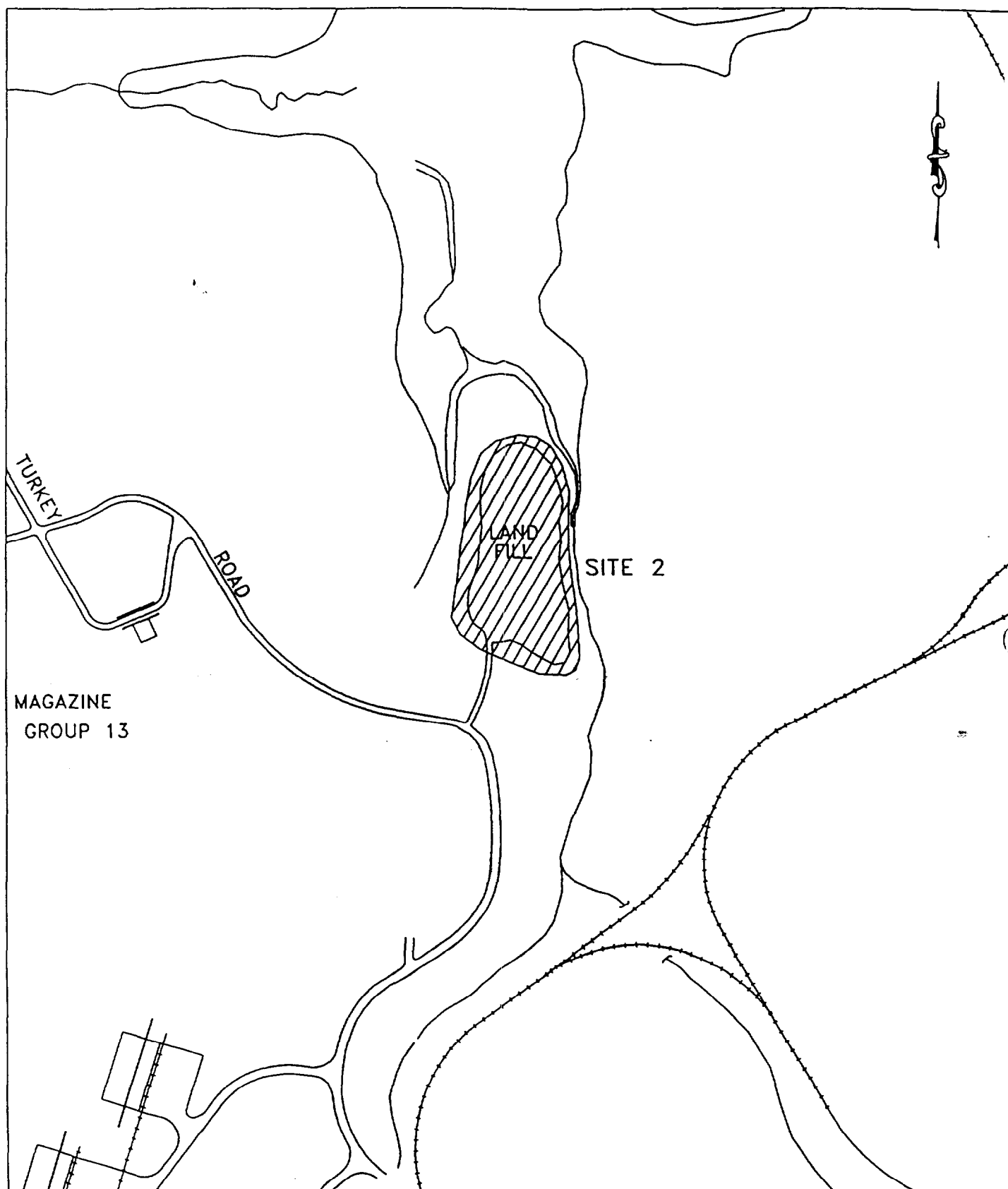
Turkey Road Landfill**Site 2: Turkey Road Landfill**

This five-acre landfill has a history of disposal from the 1940s to 1981. Approximately eight tons/year are estimated to have been dumped during this period. Wastes disposed were reported to have included mercury and zinc carbon batteries, tree stumps and limbs, construction rubble, missile hardware (i.e., wings, fins, para-packs), electrical devices, and unidentified types of drums or tanks. Field inspection confirmed most of these reported wastes, as the waste material is not completely covered or has had its cover eroded. Some mold-type structures of either fiberglass or asbestos-containing material were located near the creek, and a natural depression filled with scrap metal and tires was located to the east, near the eastern stream channel.

The steep banks do not allow tidal wash onto the site; trash is visible along areas of the creek banks. Drain pipes were noted along the banks and are thought to be draining from nearby Turkey Road. The site itself is covered by scrub vegetation, and a few small trees, and contains numerous sink holes, most likely from lack of compaction of the waste materials.

The landfill was created by filling a low lying wetland area. Felgates Creek and tributary stream channels border the northern, eastern and western sides of the site. The confluence of these channels form the marsh area surrounding the site to the north. Groundwater flow is north towards Felgates Creek and surface water runoff is to the eastern and western channels.

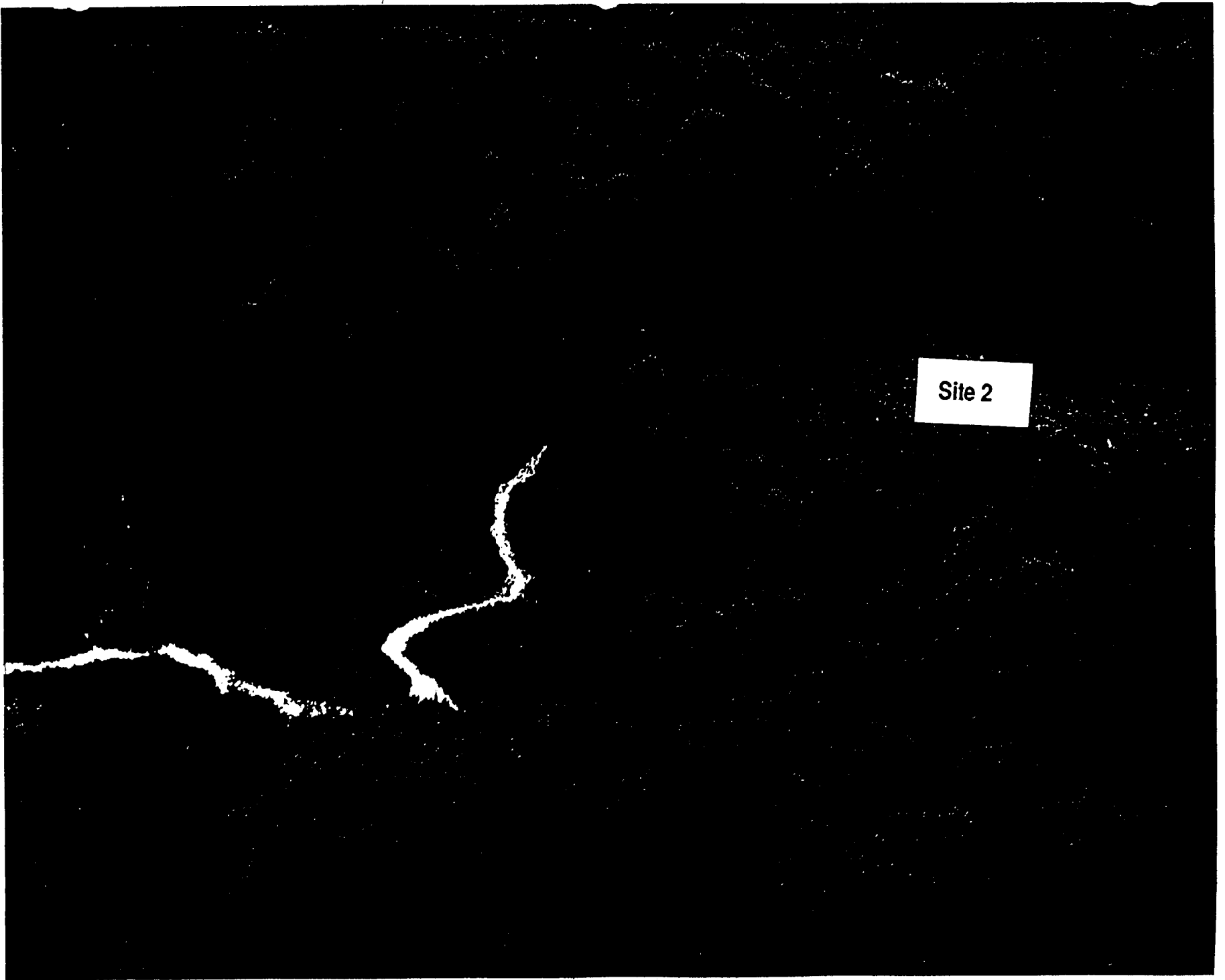
An aerial view of the landfill is presented in the first and third photographs while the second view is of the site during the summer. The last four pictures focus on the wastes disposed, in particular, scrap metal.



NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA
INSTALLATION RESTORATION PROGRAM

SITE 2
TURKEY ROAD LANDFILL

SCALE: 1" = 300'

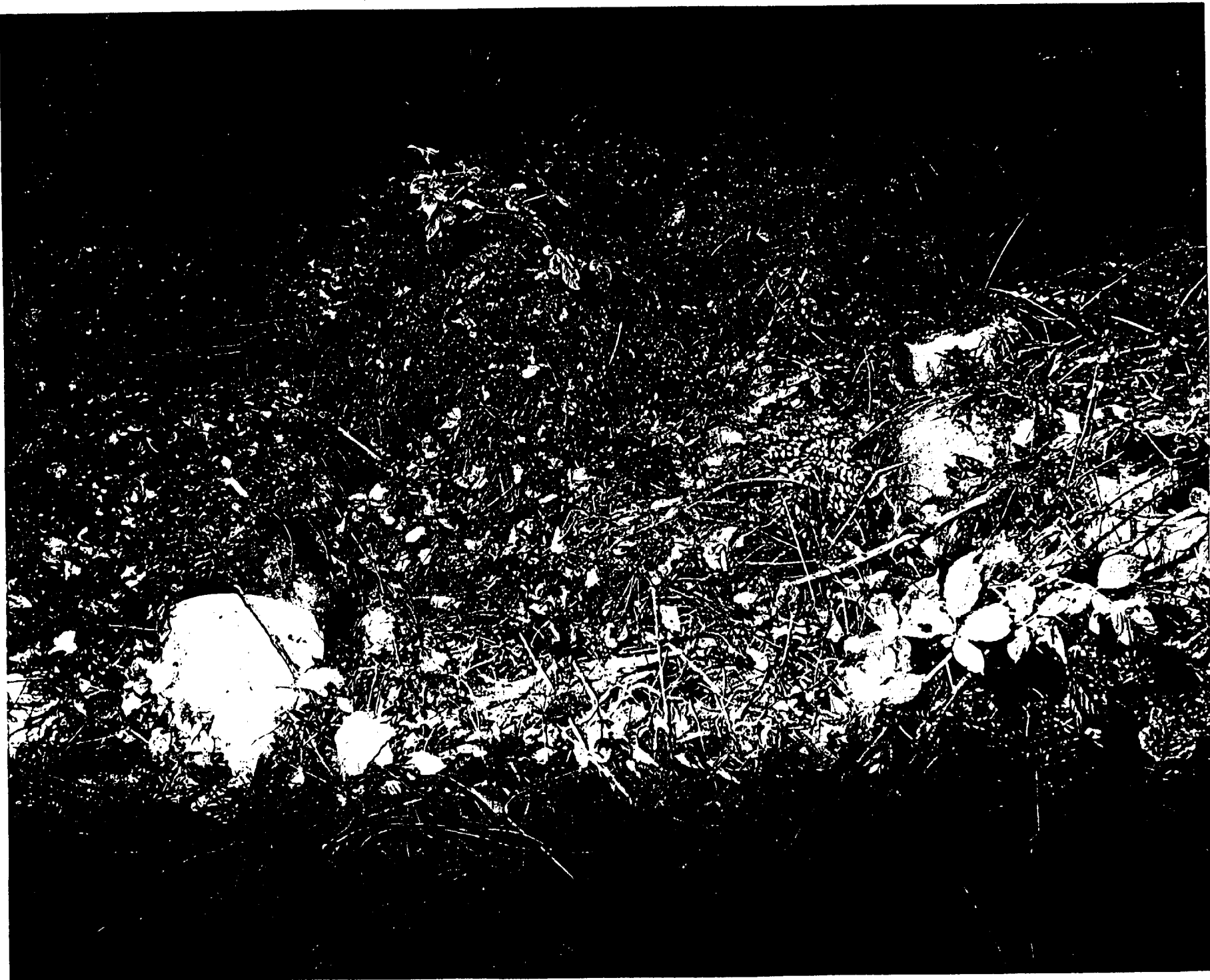




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Site 2



NWS-00109-09.10-12/16/91



NWS-00109-09.10-12/16/91



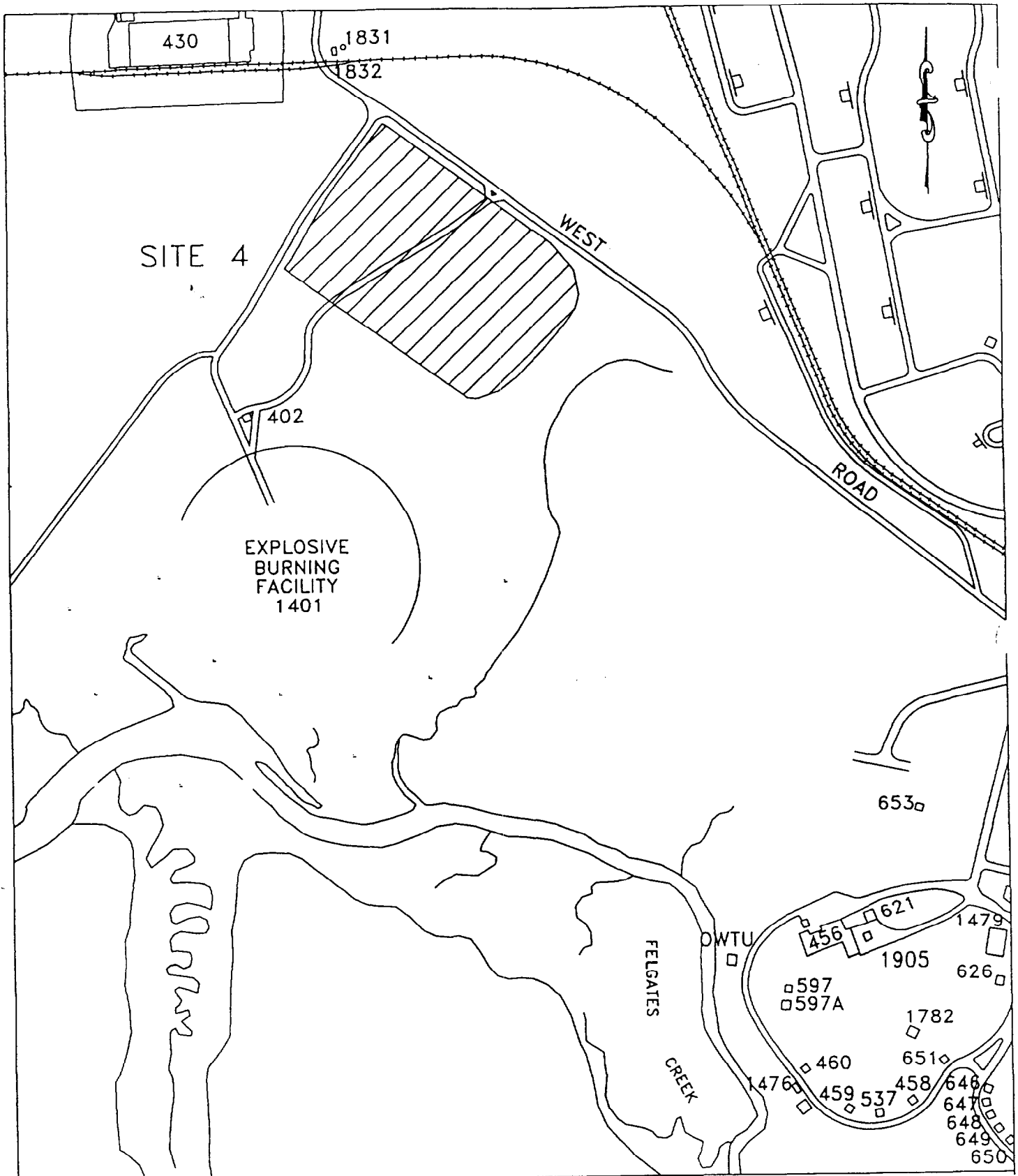
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Burning Pad Residue Landfill**Site 4: Burning Pad Residue Landfill**

This four acre burning pad residue landfill is located south of West Road, near the current burning pad facility. This site was used from 1940 to approximately 1975 to dispose of batteries from weapons (unknown types), burning pad residues (possibly containing aluminum, cyclotrimethylene RDX, TNT, and 2,4-dinitrotoluene (2,4-DNT)), tree stumps, fly ash from coal-fired boilers, mine casings, electrical equipment (telephone poles, line hardware, etc.), and transformers. Approximately 17 tons of waste/year were buried at the site over a period of about 35 years. Currently, small amounts of foliage are burned on site.

The site is primarily a cleared area with scrub grasses and some small trees. The site has an area of ash mixed with soil cover. This area is near an embankment edge. The remainder of the field is covered with grasses, and across the embankment is mature forest cover. Groundwater flow is southwesterly to Felgates Creek. Surface water flow is either easterly towards a tributary leading to Felgates Creek or southwesterly to Felgates Creek. Access to the site is restricted, but there are no fences or other barriers around the site.

The first photograph locates the site relative to the current burning pad facility and Felgates Creek. The actual residue is illustrated in the next picture while the last photograph is a closer view of the site and the current burning pad facility.



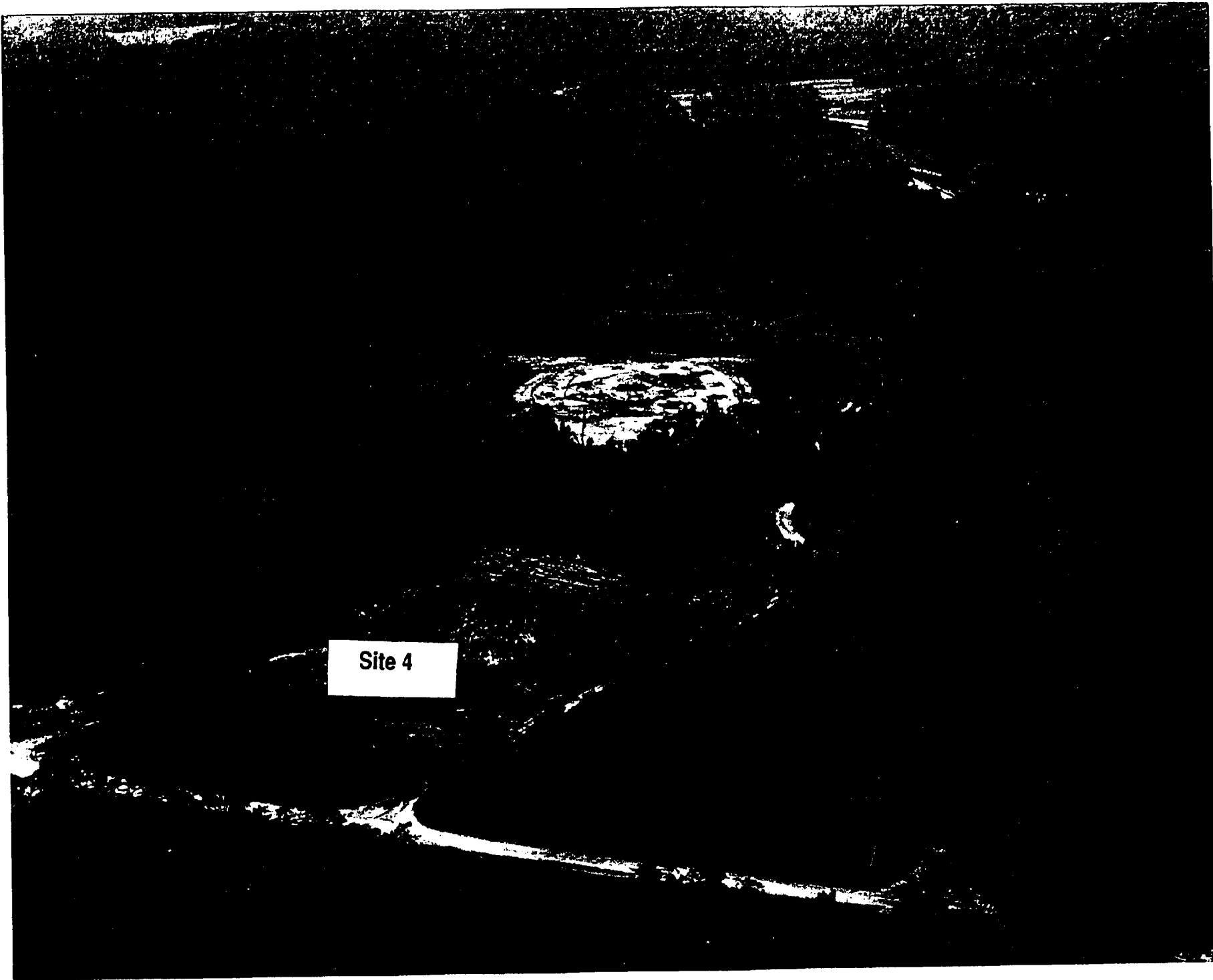
NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA
INSTALLATION RESTORATION PROGRAM

SITE 4
BURNING PAD RESIDUE LANDFILL

SCALE: 1" = 300'



NWS-00109-09.10-12/16/91



Site 4



NWS-00109-09.10-12/16/91

Site 4

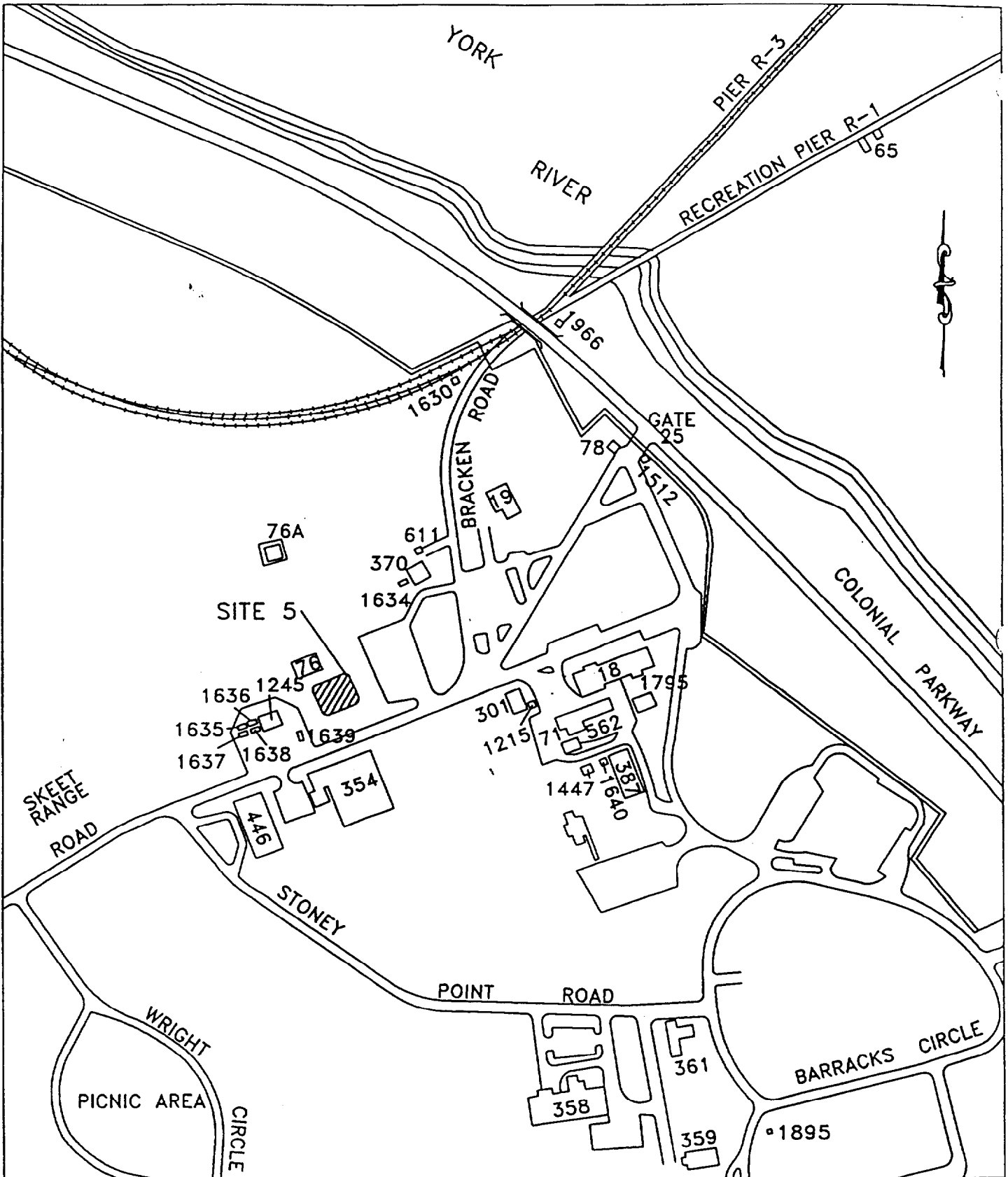


Surplus Transformer Storage Area**Site 5: Surplus Transformer Storage Area**

The Surplus Transformer Storage area is located adjacent to the south side of Building 76. From 1940 to 1981, surplus transformers containing PCBs were stored here. It has been estimated that approximately 300 pounds of PCB wastes leaked from transformer units. A December 1982 cleanup effort resulted in the removal of contaminated soils. Documentation of this cleanup is limited.

The site is fenced and the transformers sit on either of two concrete pads or on slotted, metal pallets. Grasses and a young tree grow inside the fenced area. There appears to be no containment for spills.

An aerial photograph provides a view of the area as it was used in the past. The second photograph is of the building. The last picture is of a leaky non-PCB transformer.



NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA

INSTALLATION RESTORATION PROGRAM

SITE 5

SURPLUS TRANSFORMER STORAGE AREA

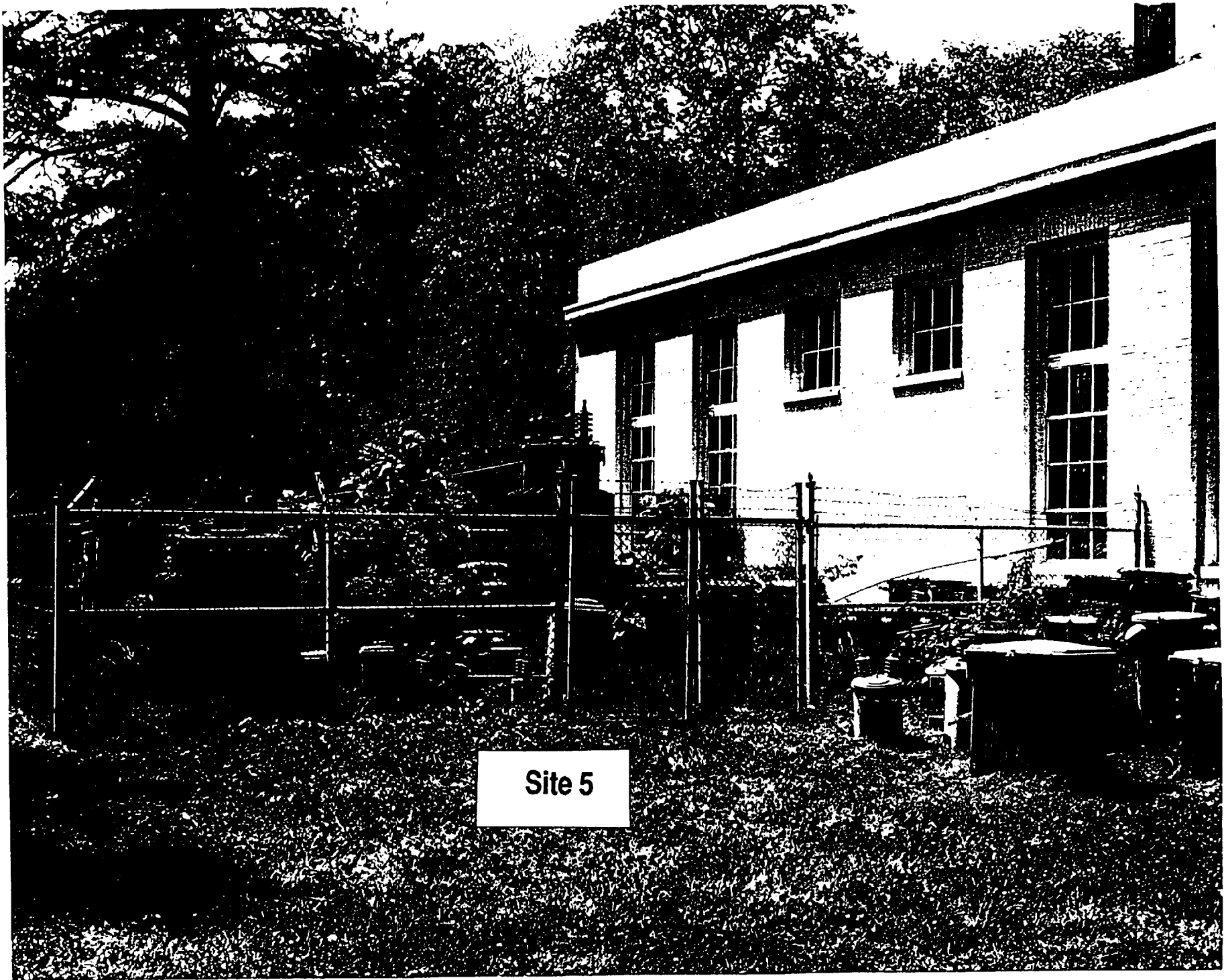
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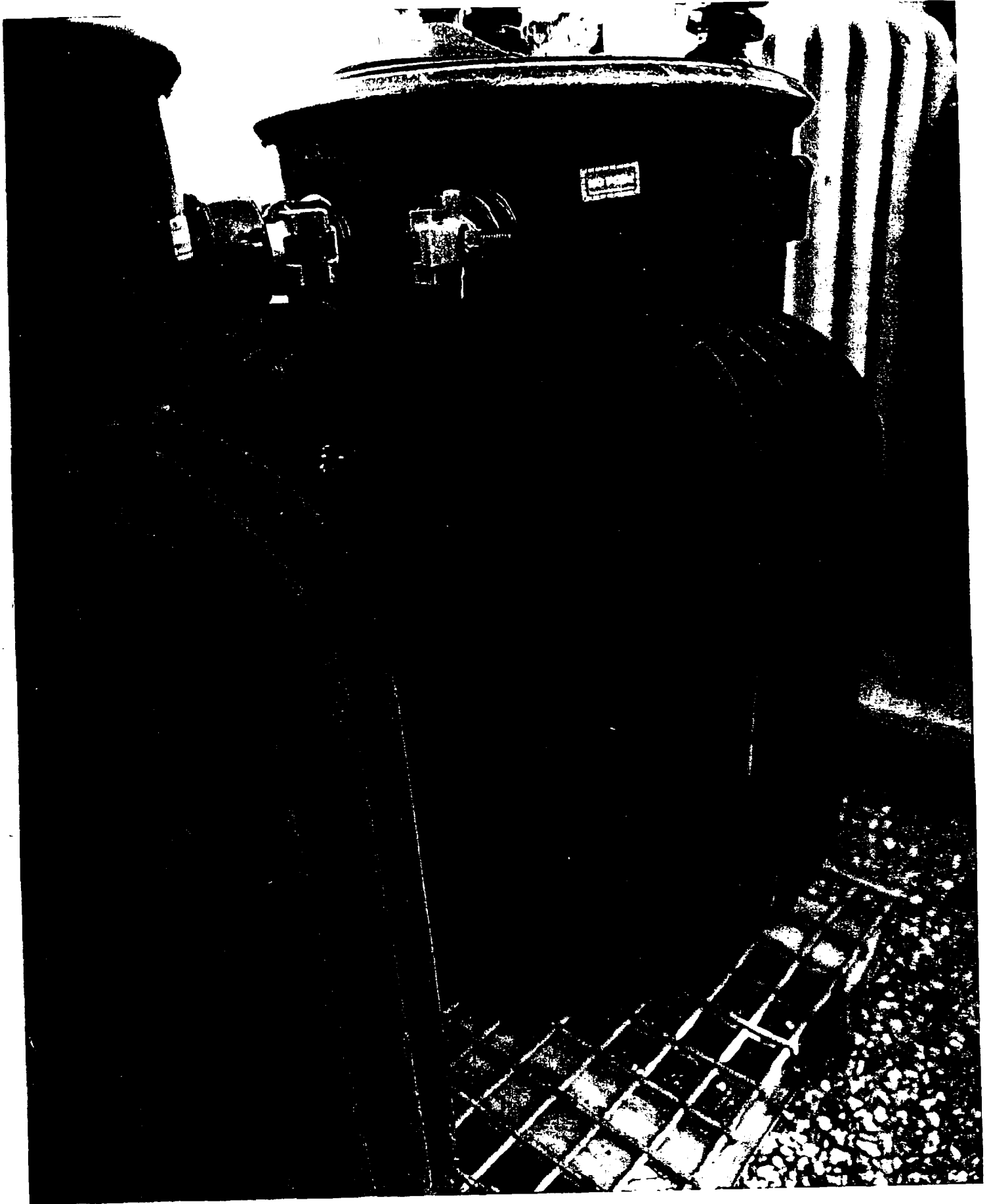
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An aerial photograph showing a dark, textured landscape. In the upper left, a rectangular area is outlined in white. To its right is a white rectangular label with the text "Site 5". Below this, a large, irregularly shaped, light-colored area is visible, possibly a clearing or a large building. To the right of this area, there is a long, narrow, light-colored strip. In the lower right, a curved, light-colored feature is visible. The overall image is high-contrast and grainy.

Site 5



Site 5

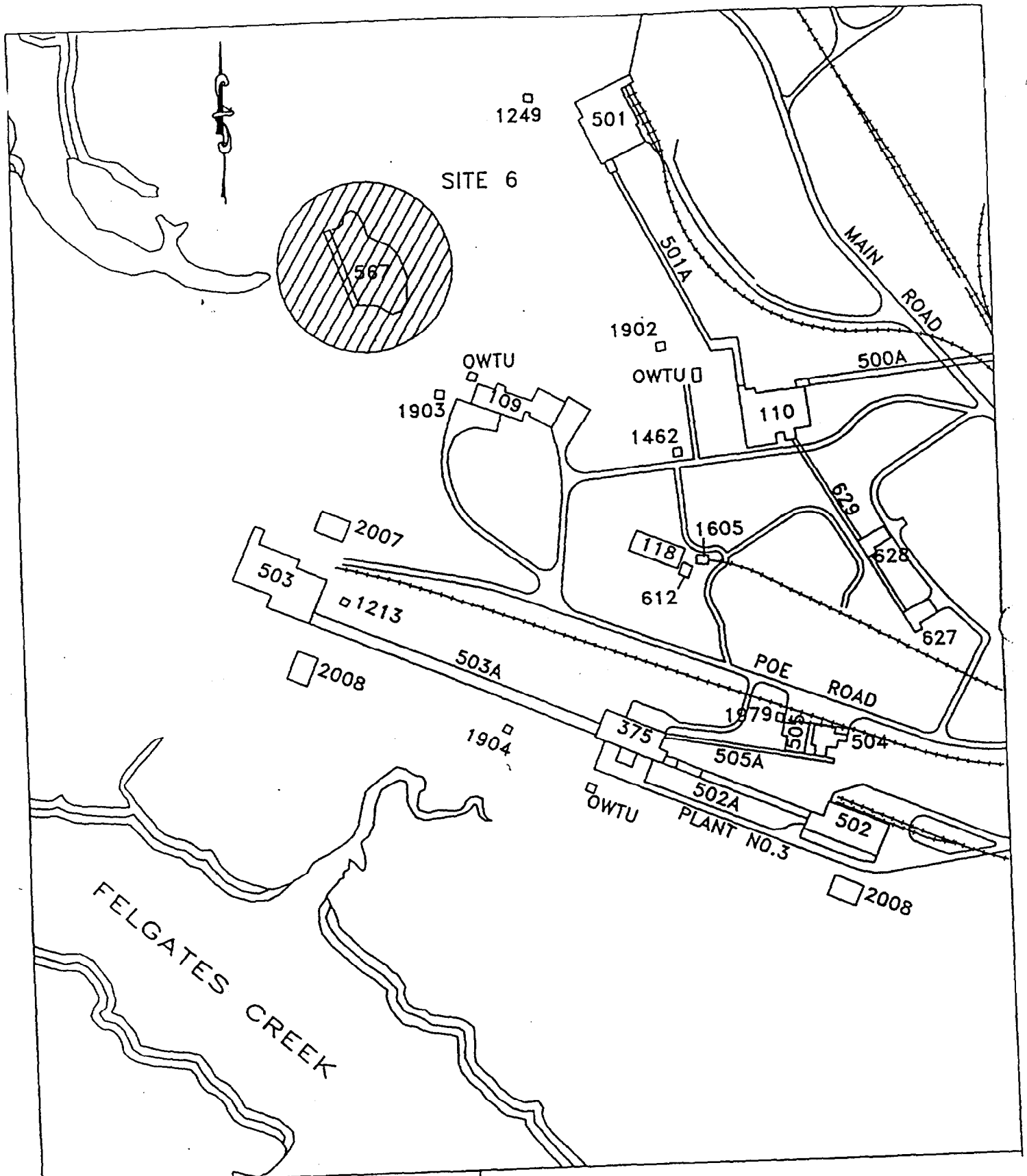


**Explosive-Contaminated Wastewater
Impoundment****Site 6: Explosive-Contaminated Wastewater Impoundment**

Site 6 is a three acre surface impoundment which received drainage from two buildings. Contaminated wastewaters, containing explosives (TNT and RDX) and solvents [trichloroethylene, trichloroethane (TCA), and cyclohexanone] from the explosives reclamation facilities (Building 109) and from explosive-loading operations (Building 110), were discharged to the impoundment from 1942 to 1975. It is believed that the area also receives runoff containing paint-related wastes from Building 501.

The impoundment was created by building a dam across the headwaters of the small tributary to Felgates Creek. The retention structure held wastewaters in the area until the wastes drained into the marshy area on the other side of the dam. The impoundment's water level is seasonal and tidal. Tidal mud flats are present along the tributary. Field inspection found approximately two inches of water in the area due to recent rains and tidal effects. Surface water flow is northwestward, into Felgates Creek.

In the first photograph, the site is located in the top right hand corner, in the woods. The second shot is of the drain pipe. The third picture shows the retaining wall of the impoundment with the tidal area behind the wall.



NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA

INSTALLATION RESTORATION PROGRAM

SITE 6
EXPLOSIVE CONTAMINATED WASTE
WATER IMPOUNDMENT

SCALE: 1" = 300'

Site 6



NWS-00109-09.10-12/16/91



NWS-00109-09.10-12/16/91

**Plant 3 Explosive-Contaminated
Wastewater Discharge**

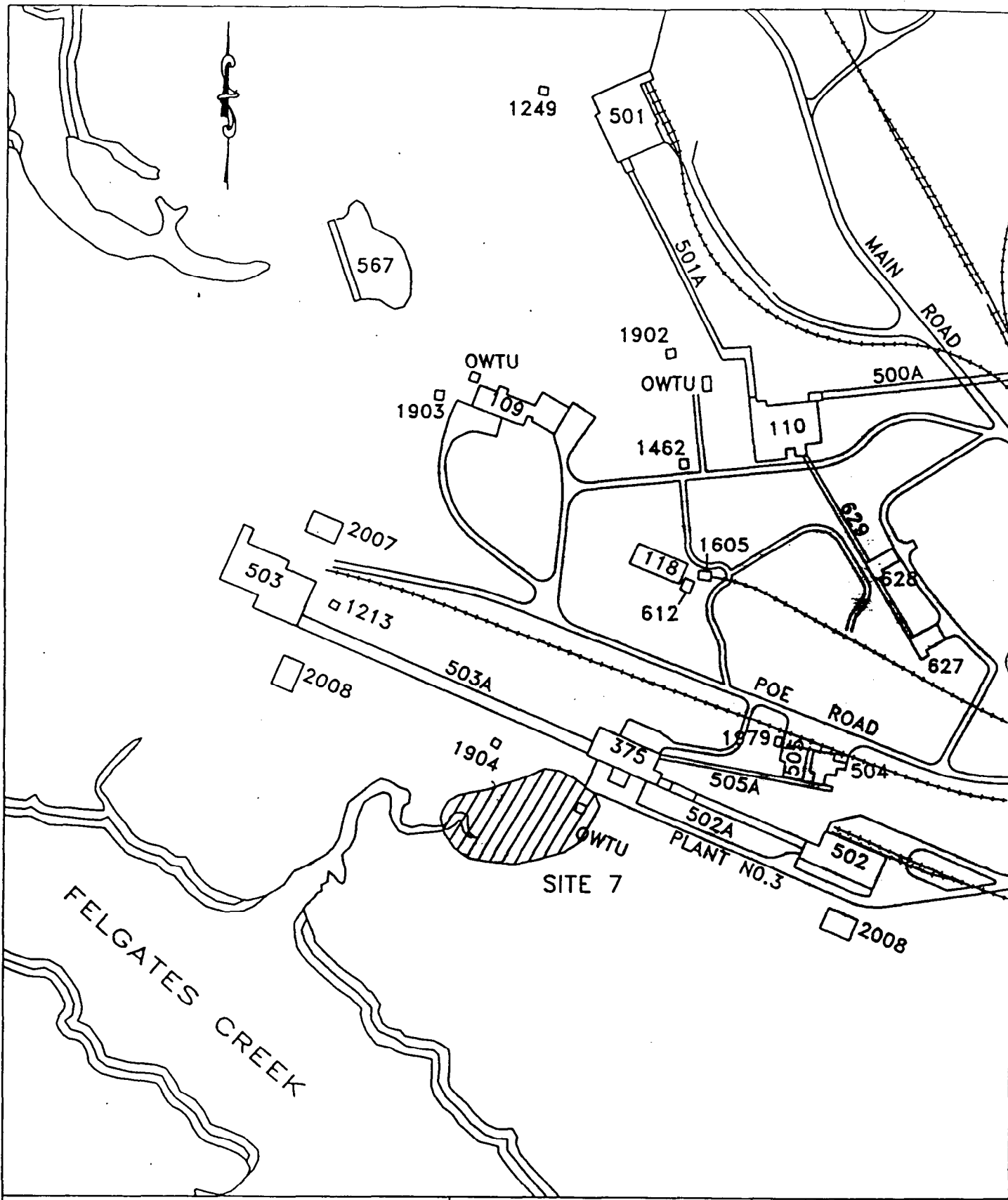
Site 7: Plant 3 Explosive-Contaminated Wastewater Discharge

Site 7 is a hillside, sloping down to wetlands along Felgates Creek, which received wastewater from the floor drain of Plant 3, an explosive loading facility. The wastewater contained the explosives TNT and RDX, and the solvents trichloroethylene (TCE) and cyclohexane. From 1945 to 1975, the wastewater was discharged directly to the area. From 1975 to 1986, the wastewater was treated in an activated carbon unit, which removed dissolved explosives from the water prior to discharge to the site. After 1986, the carbon treated wastewater was directed to the sewer system.

The receiving wetlands are located approximately one mile upstream from the confluence of Felgates Creek and the York River. Surface water and groundwater both flow into Felgates Creek.

Access is restricted to this area of the Station. The road is restricted with a gate during loading periods. Additional deterrents include flashing lights. The site is located through trees and brush, next to the carbon tower, and it is unlikely that persons would be walking the site.

This first photograph locates the site, next to the white building, with respect to Felgates Creek. The next two photographs are of the drainage culvert from the floor drain. The white pipes for carbon treatment of the wastewater are in the upper left corner. The last pictures show a closeup of the culvert and the woods in the area.



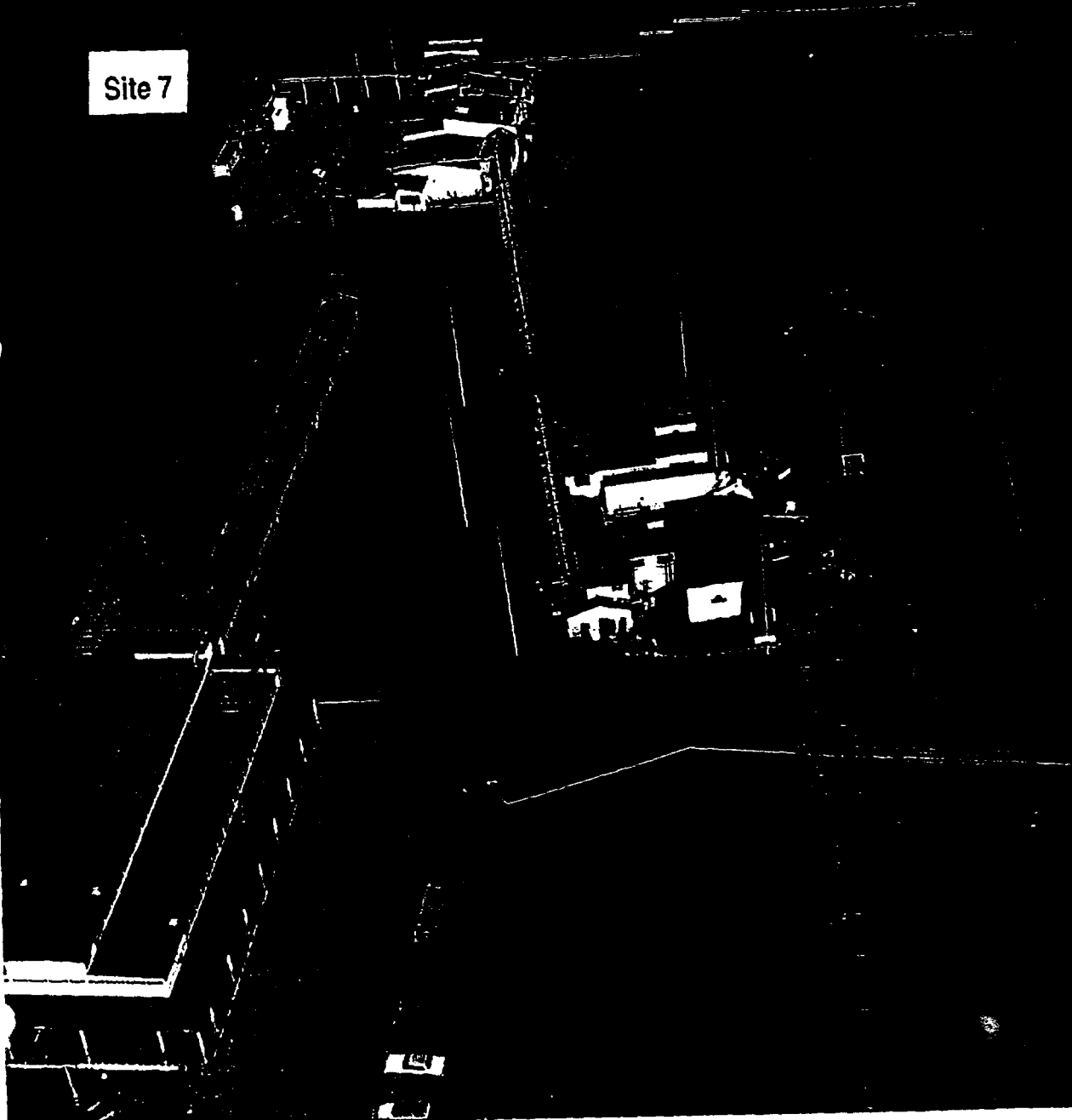
NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA

INSTALLATION RESTORATION PROGRAM

SITE 7
PLANT 3 - EXPLOSIVE CONTAMINATED
WASTE WATER DISCHARGE AREA

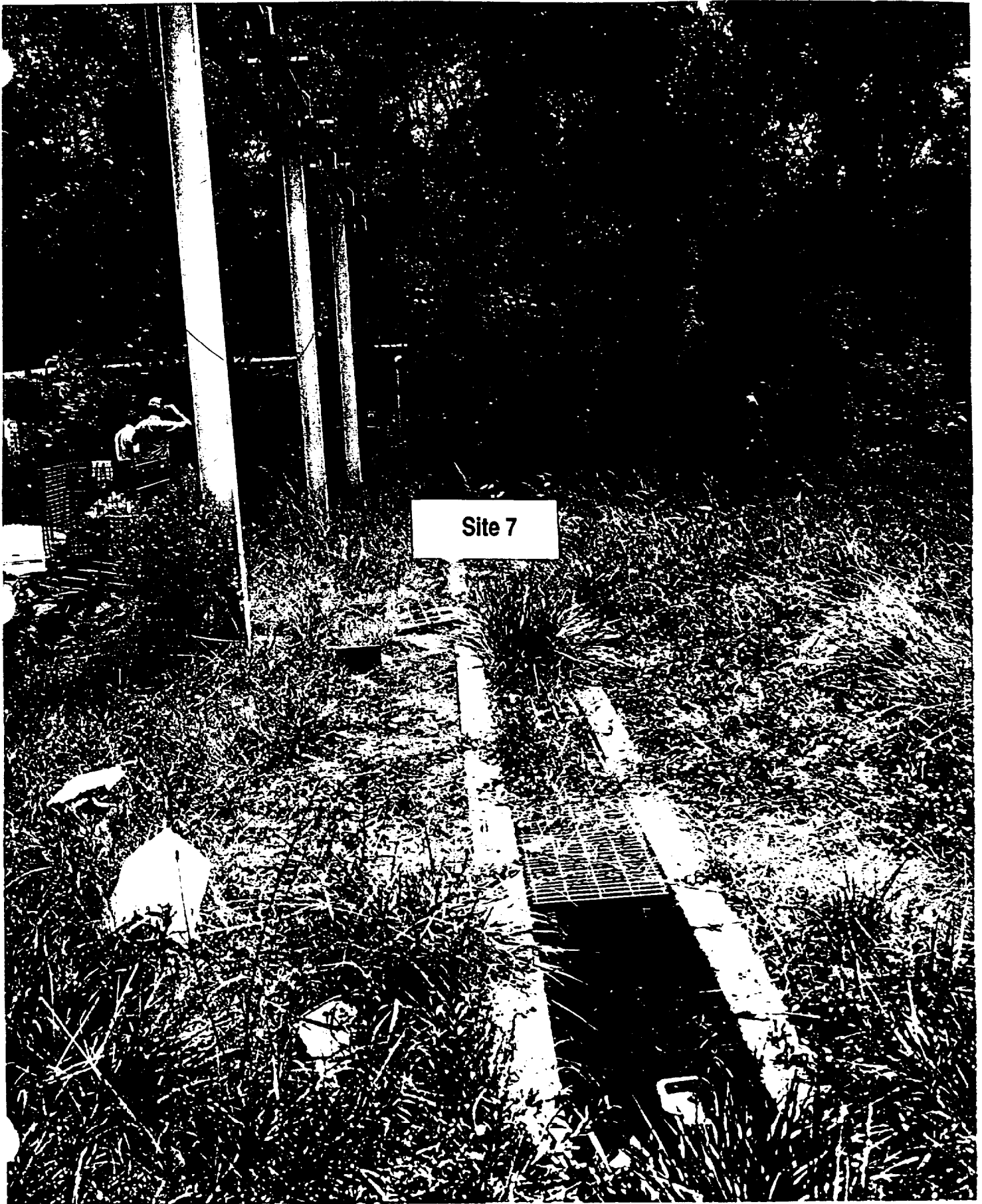
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Site 7





NWS-00109-09.10-12/16/91



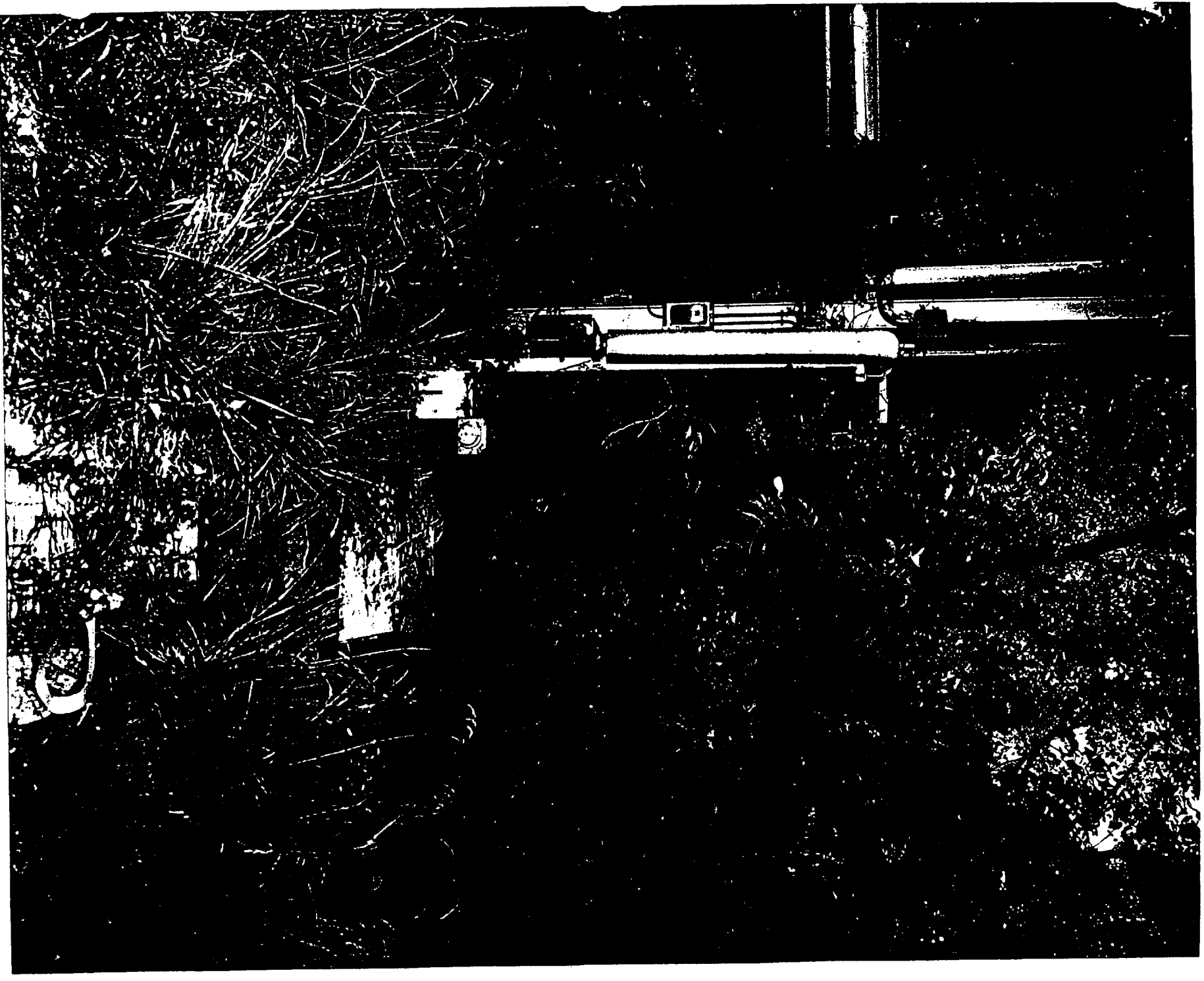
Site 7 00000003 001



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SW-1
1-11-91
201 2.1.91

NWS-00109-09.10-12/16/91



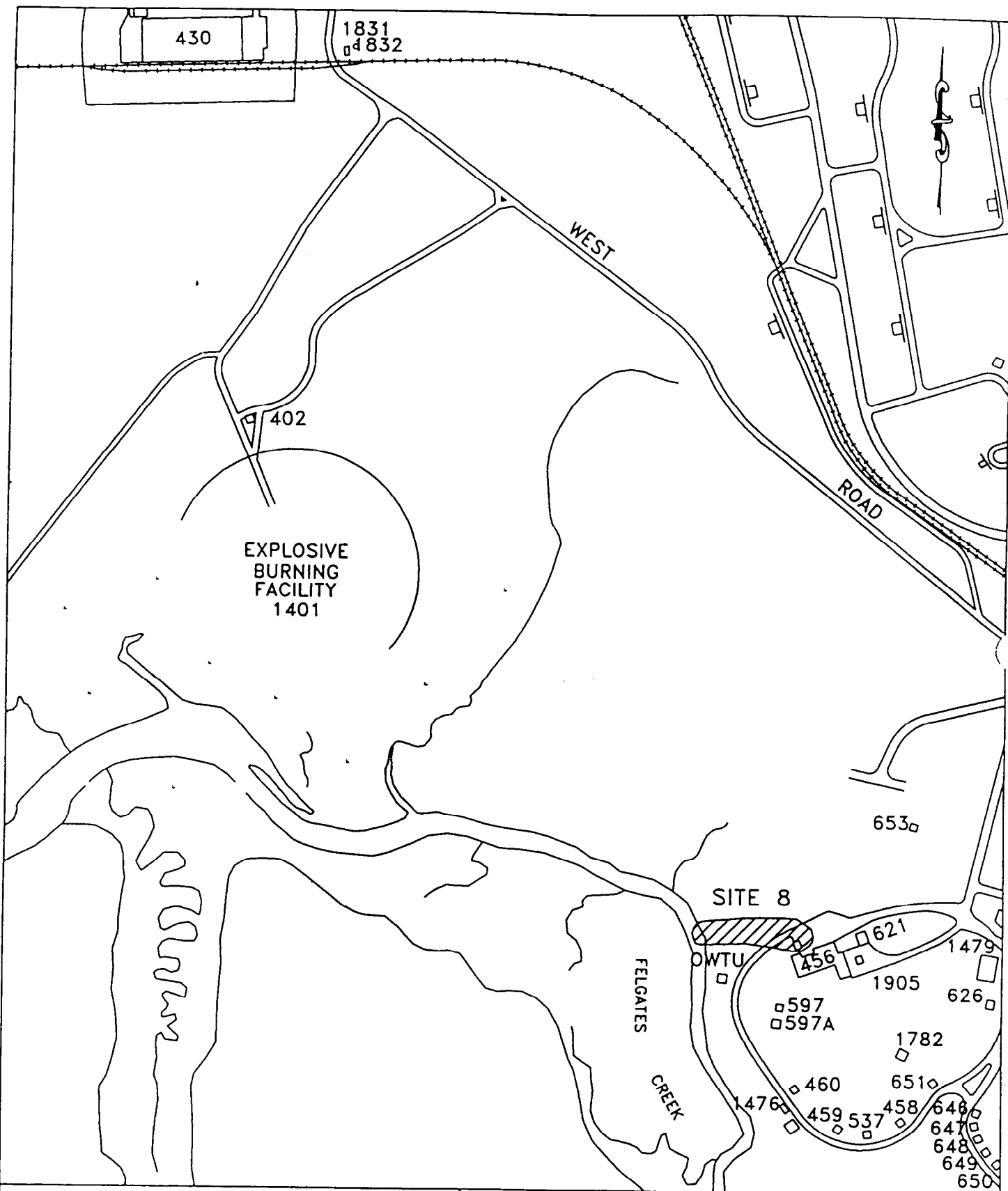


NWS-00109-09.10-12/16/91

**NEDED Explosive-Contaminated
Wastewater Discharge Area**Site: 8 Naval Explosives Development Engineering Department (NEDED) Explosive-Contaminated Wastewater Discharge Area

This site has a drainage area of approximately two acres, which discharges into Felgates Creek. The site originated as a drainage ditch immediately over a steep bank by the paved road area. Two culverts were noted during the field visit. The site received floor drain wastewater from the former NEDED complex from 1940 to 1975. The wastewater contained unspecified solvents, spent/neutralized acids, explosives residues, trichloroethylene, acetone, and cyclohexane. Currently, the site appears to receive only surface water runoff.

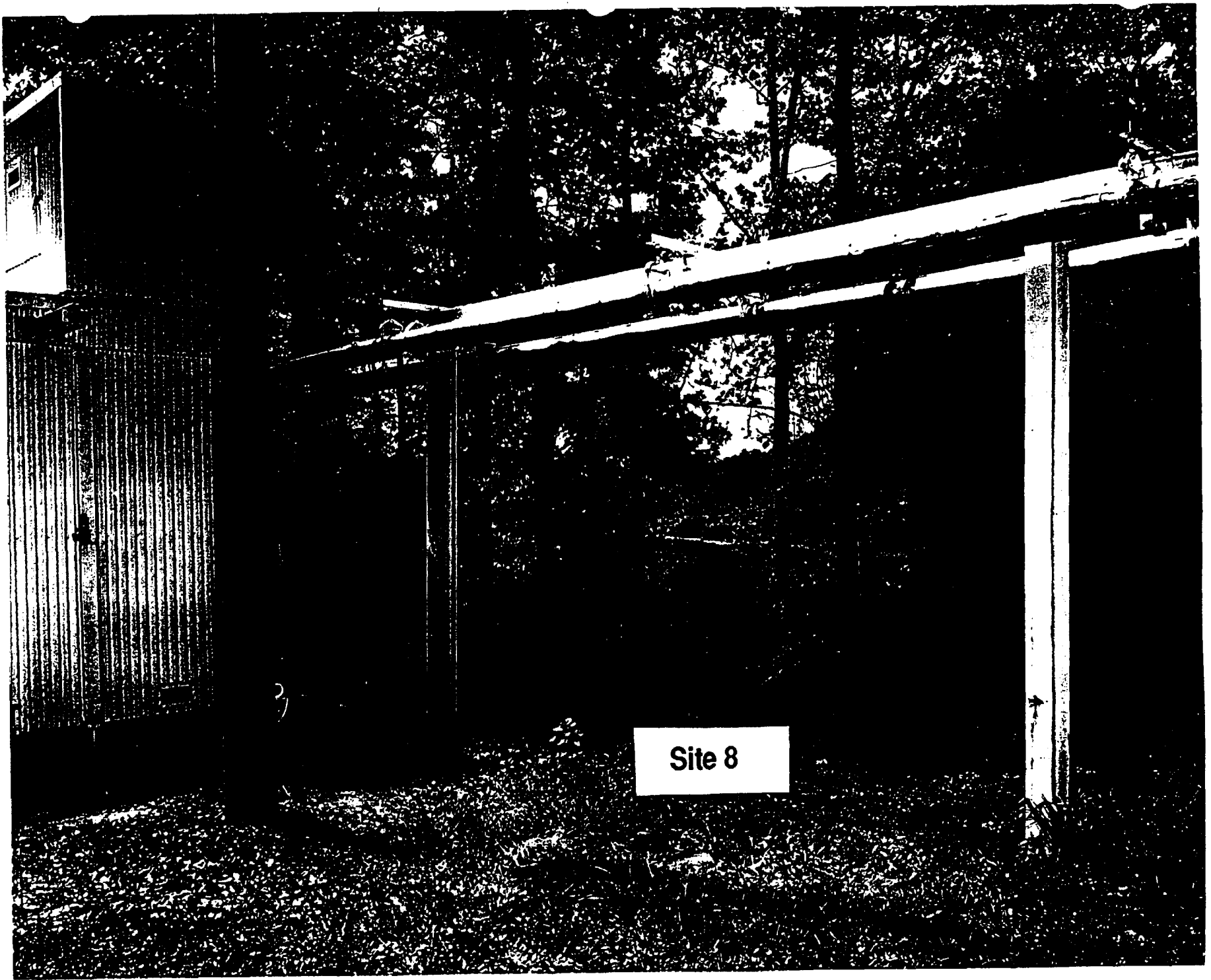
The first picture was taken looking at the drainage area from the hill. The second photograph is of the drainage pipe. Surface water runoff and precipitation are the only water types presently in the area. The last two pictures are closeups.



NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA
INSTALLATION RESTORATION PROGRAM

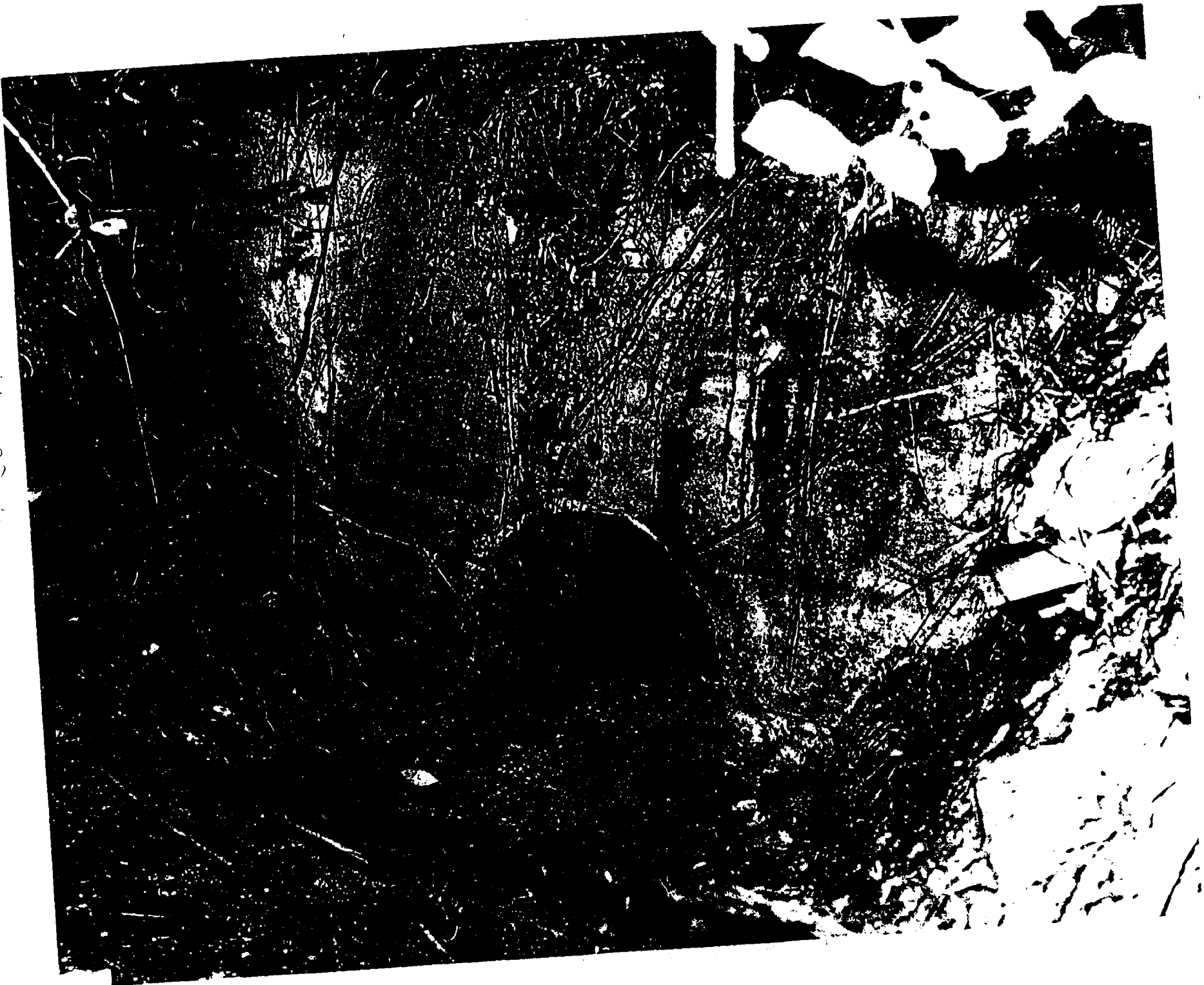
SITE 8
NEDED EXPLOSIVE CONTAMINATED
WASTE WATER DISCHARGE AREA

SCALE: 1" = 300'

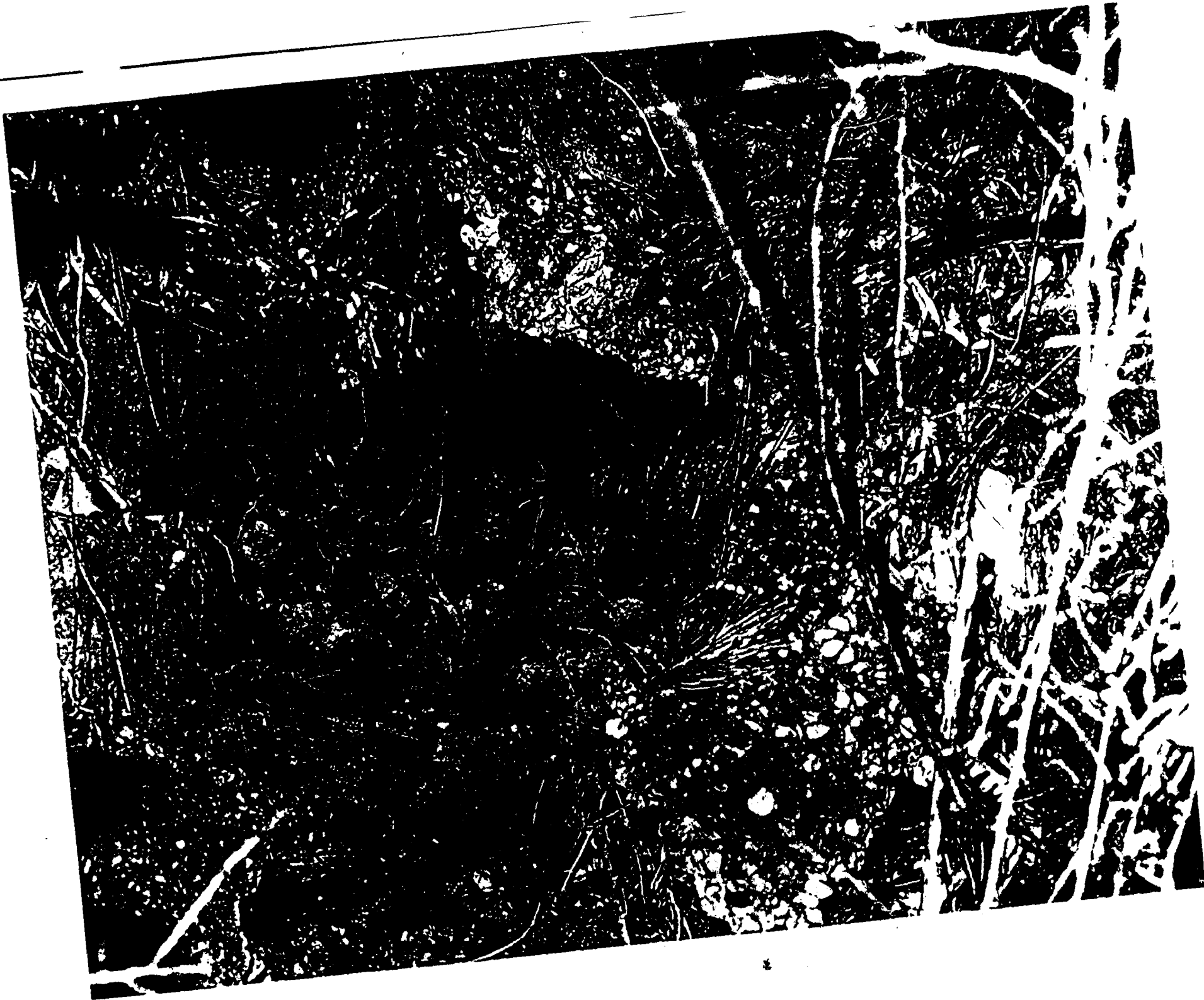


Site 8

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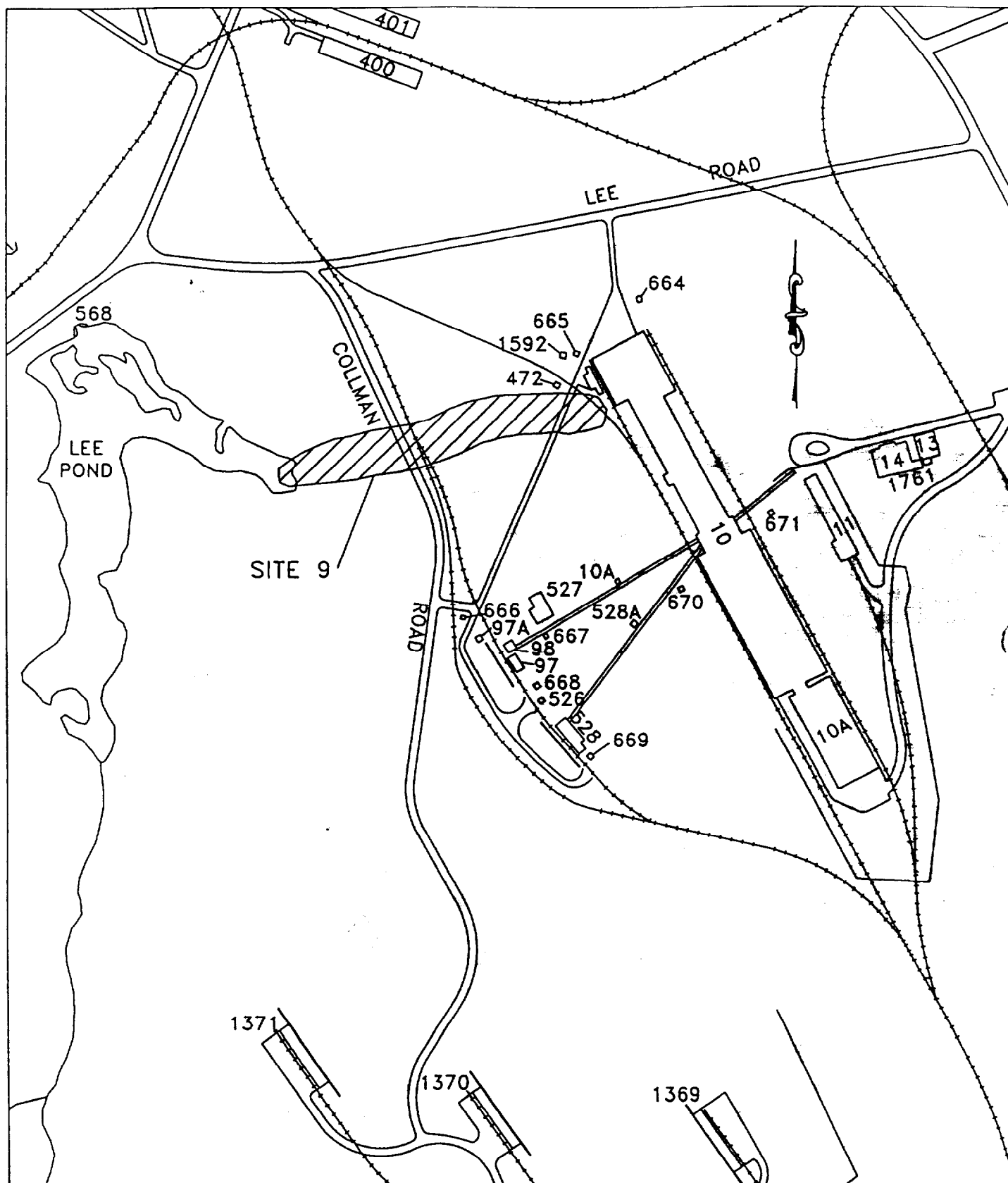
**Plant 1 Explosive-Contaminated
Wastewater Discharge Area**

Site 9 : Plant 1 Explosives-Contaminated Wastewater Discharge Area

This area was used from the late 1930s to 1975 for the drainage of Plant 1 explosive-contaminated wastewater, which may also have contained substantial quantities of organic solvents. TNT, RDX and HMX may, as a result, be present in the surface sediments, the drainageway or in the bottom sediment of Lee Pond. Lee Pond is the main drainage receptor for this site, formed by constructing Lee Road across the headwaters of the eastern branch of Felgates Creek. Lee Pond is effectively a settling area for particulates; it drains into Felgates Creek, then northward to the York River. Migration potential exists via surface water flow and through near surface soils. An estimated 5,200 pounds of TNT and RDX and 1,600 pounds of HMX may have been discharged to the site. Trichloroethylene and other solvents also may have been discharged from the plant with the explosive-contaminated wastewater.

A drainage ditch leads the wastewater discharge from Building 10 to the Site 9 area. The area is wooded and sloped, with a fenced access. Two culverts mark the beginning of the drainage area which is usually moist to wet. Just above the point where the water pooled, a small pile of 30-gallon drums and rail road ties were noted.

The first photograph is an aerial of the site while the second is a closeup of the drainage ditch.



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SITE 9
PLANT 1 - EXPLOSIVE CONTAMINATED
WASTE WATER DISCHARGE AREA

SCALE: 1" = 300'



Site 9



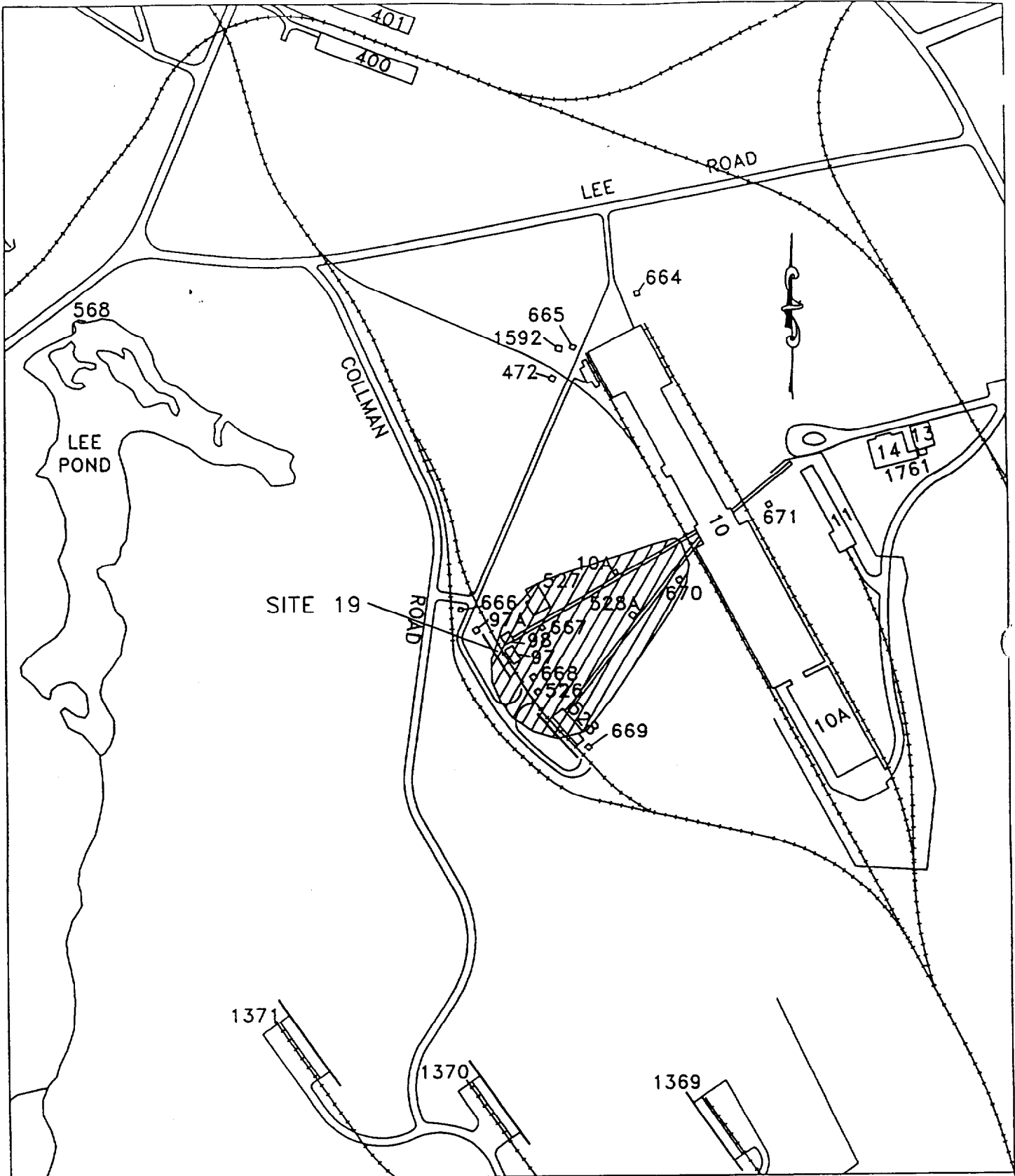
NWS-00109-09.10-12/16/91

Conveyor Belt Soils at Building 10**Site 19: Conveyor Belt Soils at Building 10**

The conveyor belt (Site 19) carried TNT powder across a gully into the loading building. The conveyor belt is completely surrounded by walls of corrugated metal, but holes are visible in the walls and floors. TNT dust settled on the soils below. The conveyor and walls/floor were sprayed with water to lower the levels of the powder dust. This rinse water dripped onto the ground below and into the adjacent ditch and rail road tracks at Site 9. The soils were primarily contaminated with TNT flakes, which spilled from the boxes being transported between buildings on the conveyor belt.

It has been recorded that some soil was removed from this site in 1973-1974, but later testing indicated that the surface soils are still contaminated. A 1977 analysis indicated that TNT and RDX are present in the soils.

In the aerial picture, the encapsulated conveyor belt can be seen extending from the white building. The second and last photographs are closeups of the tunnel.

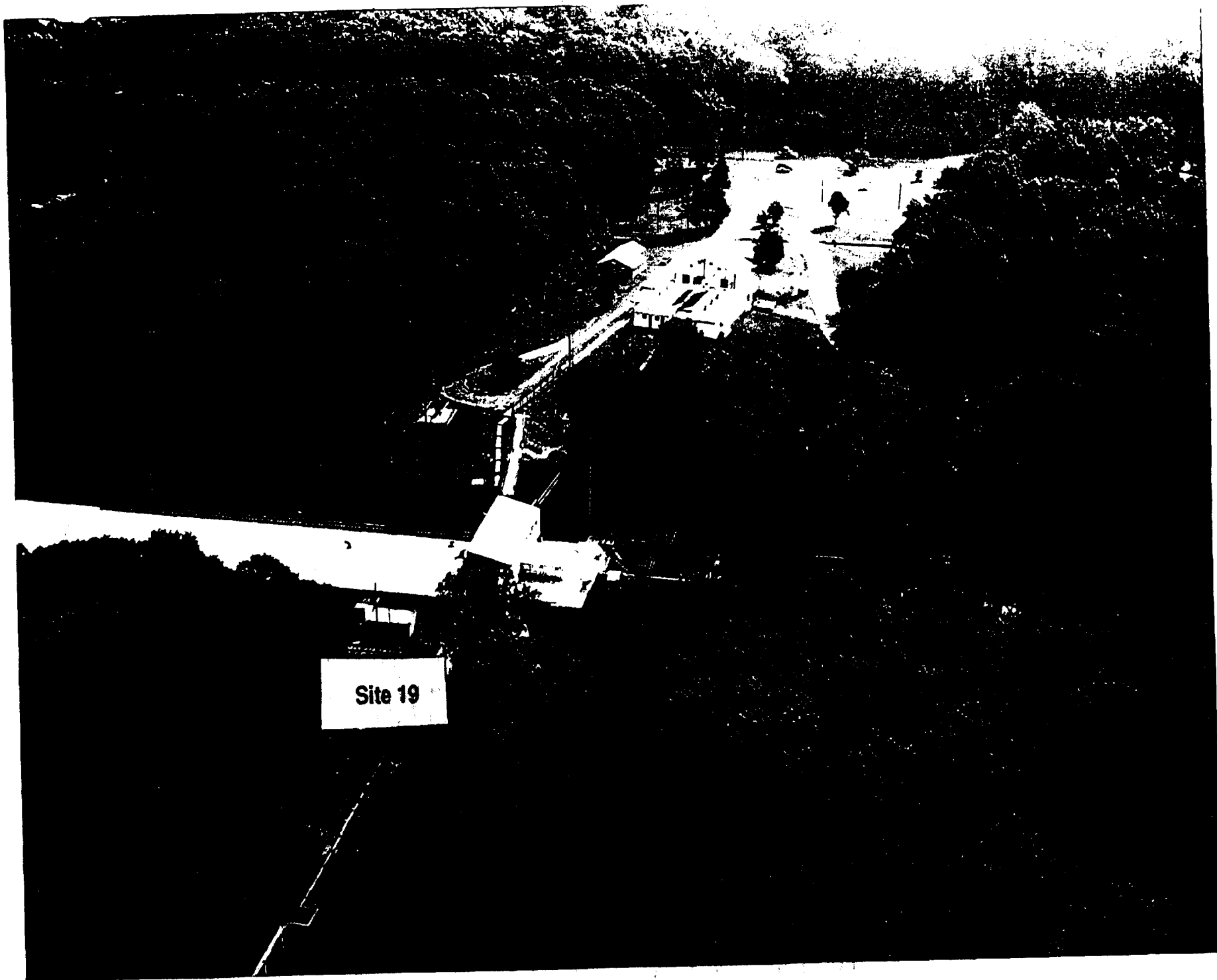


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YORKTOWN, VIRGINIA

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SITE 19
CONVEYOR BELT SOILS AT BUILDING 10

SCALE: 1" = 300'



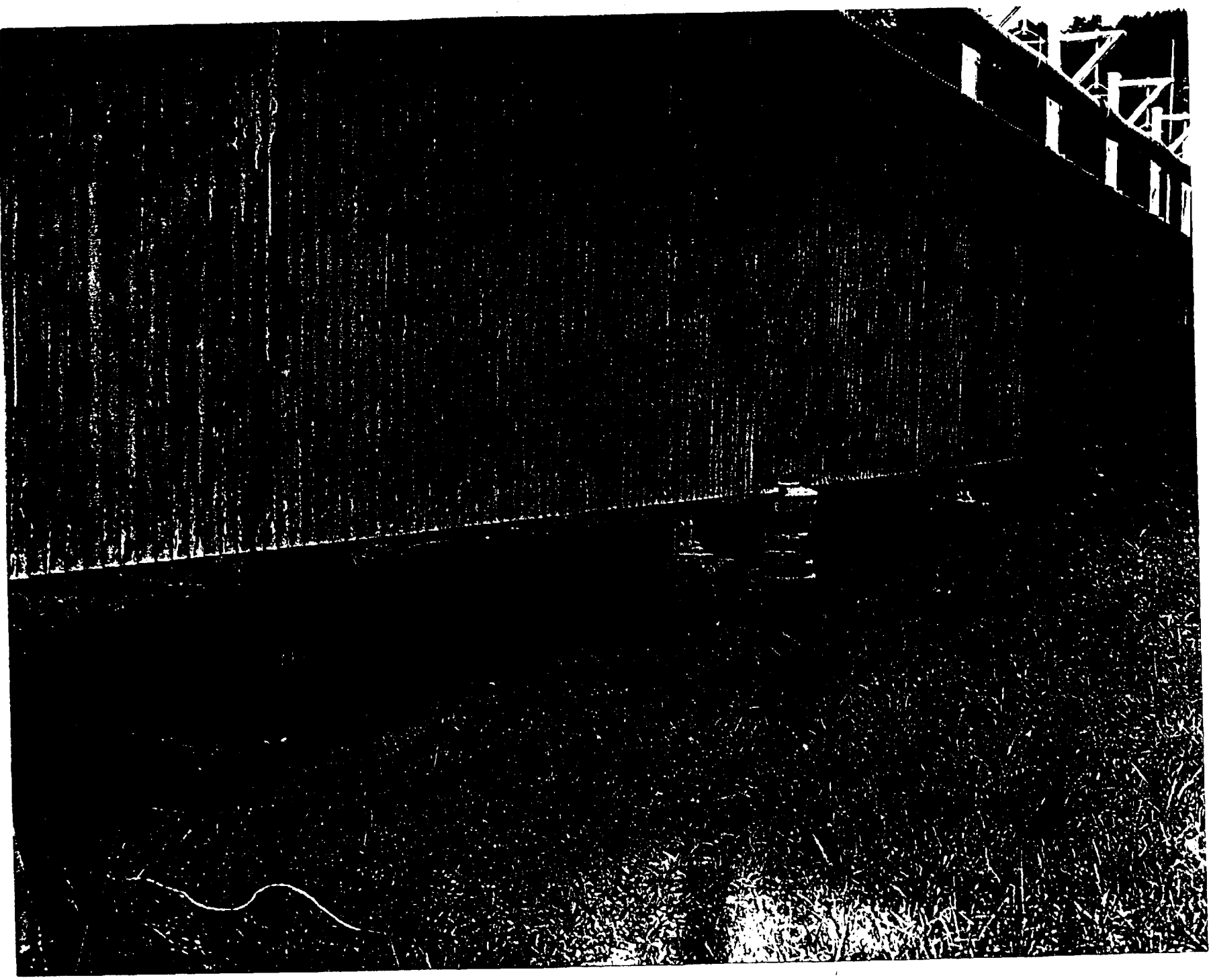
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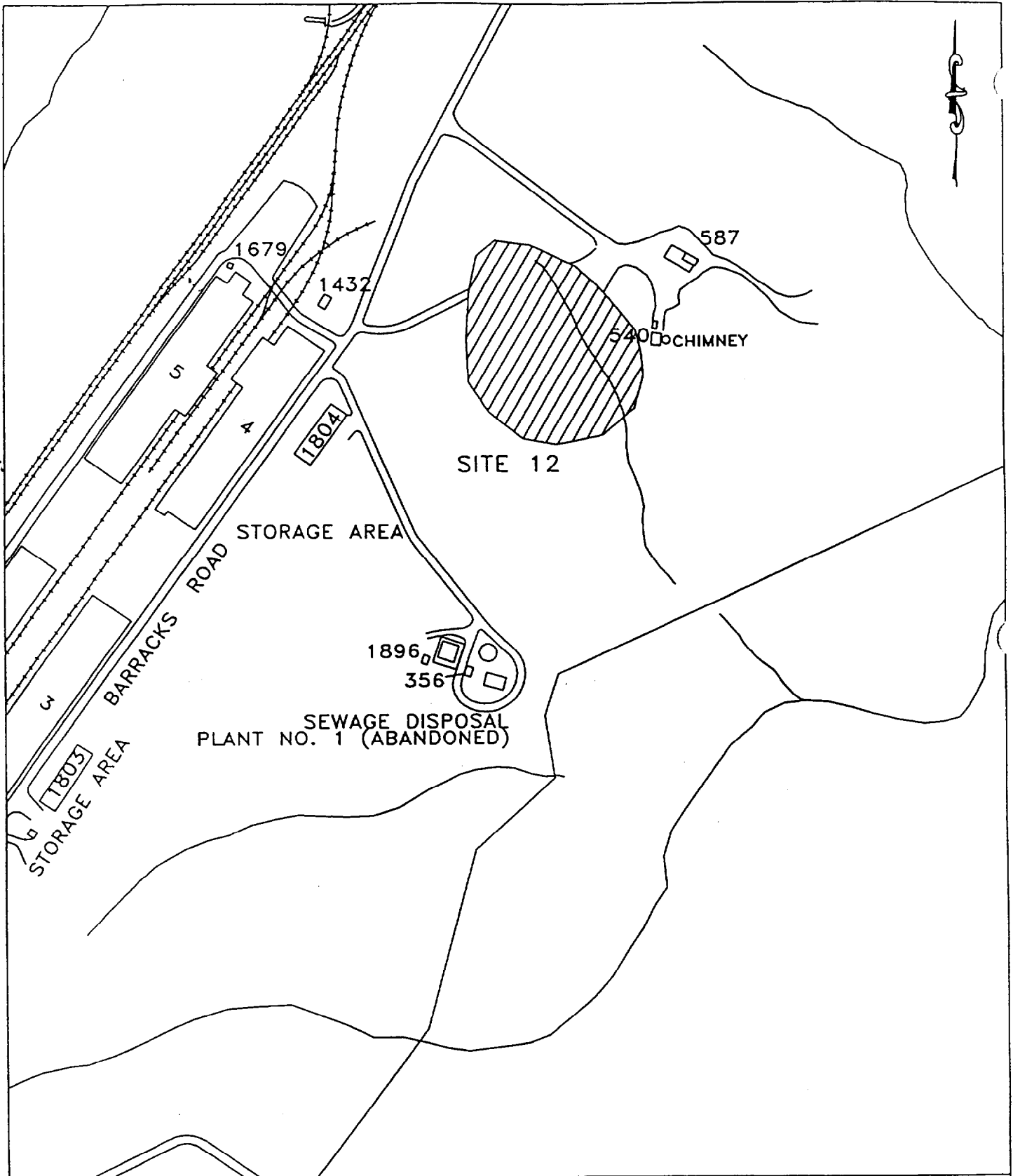
Barracks Road LandfillSite 12: Barracks Road Landfill

This landfill is a two to three acre site east of Barracks Road (adjacent to the Colonial National Historical Park). It is located upgradient of a ravine, adjacent to a recently abandoned incinerator building. The landfill was operational from approximately 1925 to the mid-1960s and was most likely created by pushing debris into and filling the present ravine. The toe of the landfill abuts the drainage channel leading to Ballard Creek. The main section of the site is relatively flat and covered by a dense growth of scrub grasses and brush, while the other part of the site is a ravine.

Field inspection showed some evidence of the wastes -- scrap metal, drums, and several tires -- scattered at the sloping edge of the ravine. Two small drainage courses, originating at the landfill, meander through the vegetation to the tributary. Where drainage eroded the cover soil, scrap metal and glass are visible. Reported wastes of this landfill include mostly garbage, refuse, scrap wood, small medicine bottles, and some explosive-contaminated packaging. Trash from incoming ships also was burned in the incinerator. Resulting ash was placed behind the incinerator and contributes to contaminated discharge into Ballard Creek. As this landfill is the predecessor of the Dudley Road Landfill, it is likely that wastes similar to those identified at Site 1 were also disposed at this site, including solvents (i.e., trichloroethylene, trichloroethane, and methyl chloride).

Surface water drains towards Ballard Creek and adjacent wetlands via the small tributary to the Creek. The tributary, which is reported to be seasonal, had approximately 1-inch of water at the time of field inspection. Groundwater flow is to the southeast.

In the aerial photograph, Barracks Road landfill is located in the center, to the right of a currently utilized trash pickup area. The second photograph shows the perimeter of the landfill, looking at the above mentioned area while the third picture is illustrating the wastes disposed.

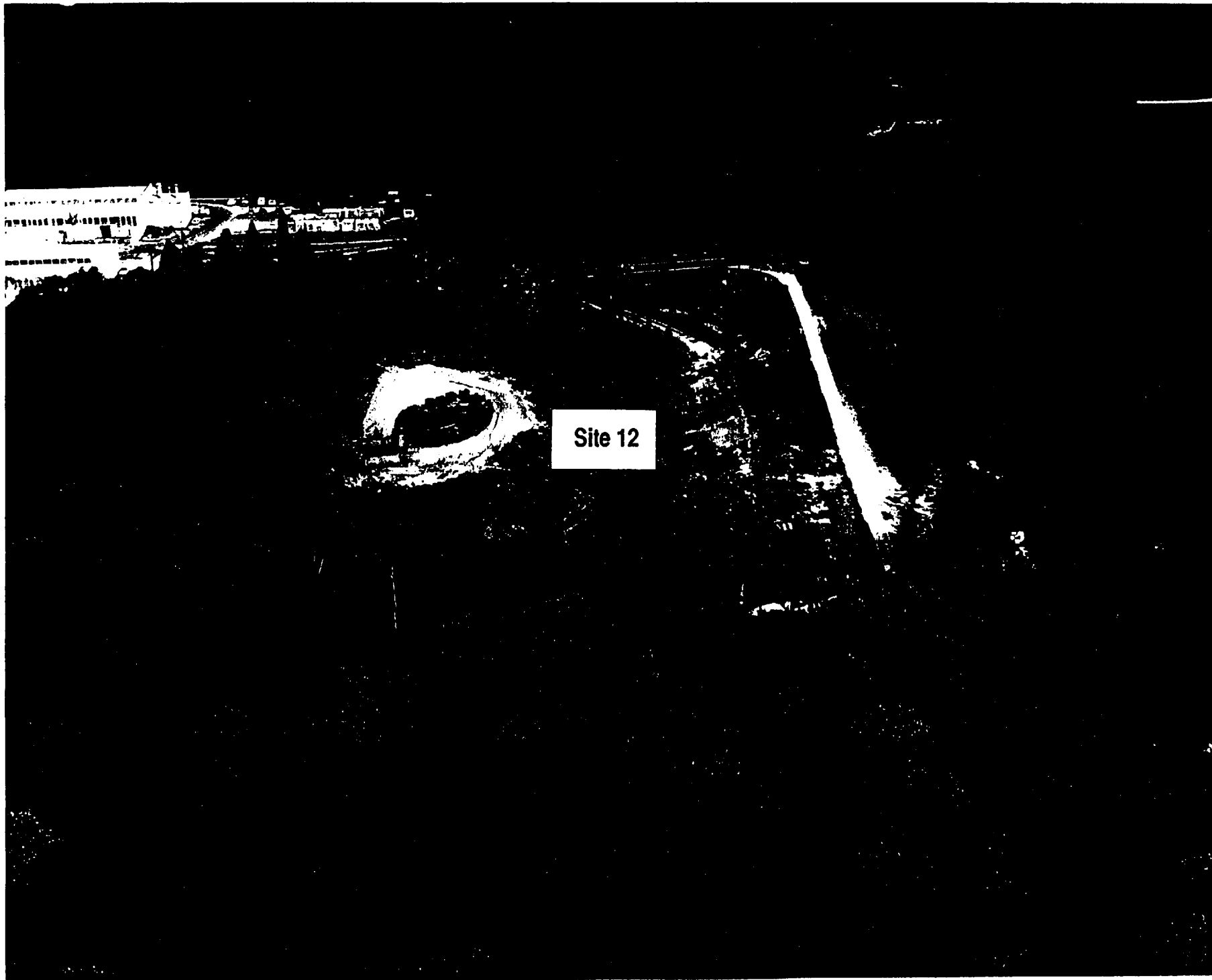


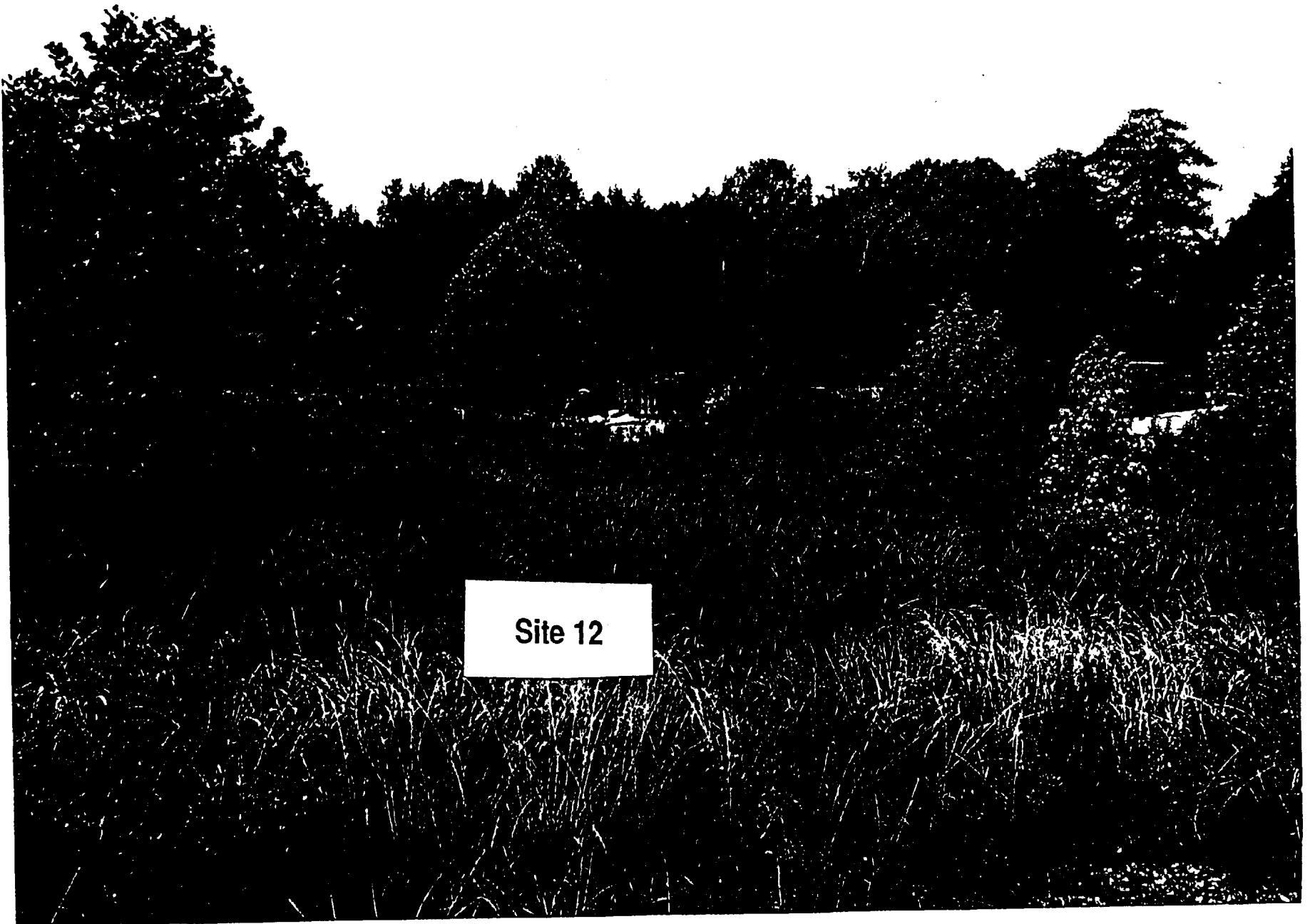
NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA

INSTALLATION RESTORATION PROGRAM

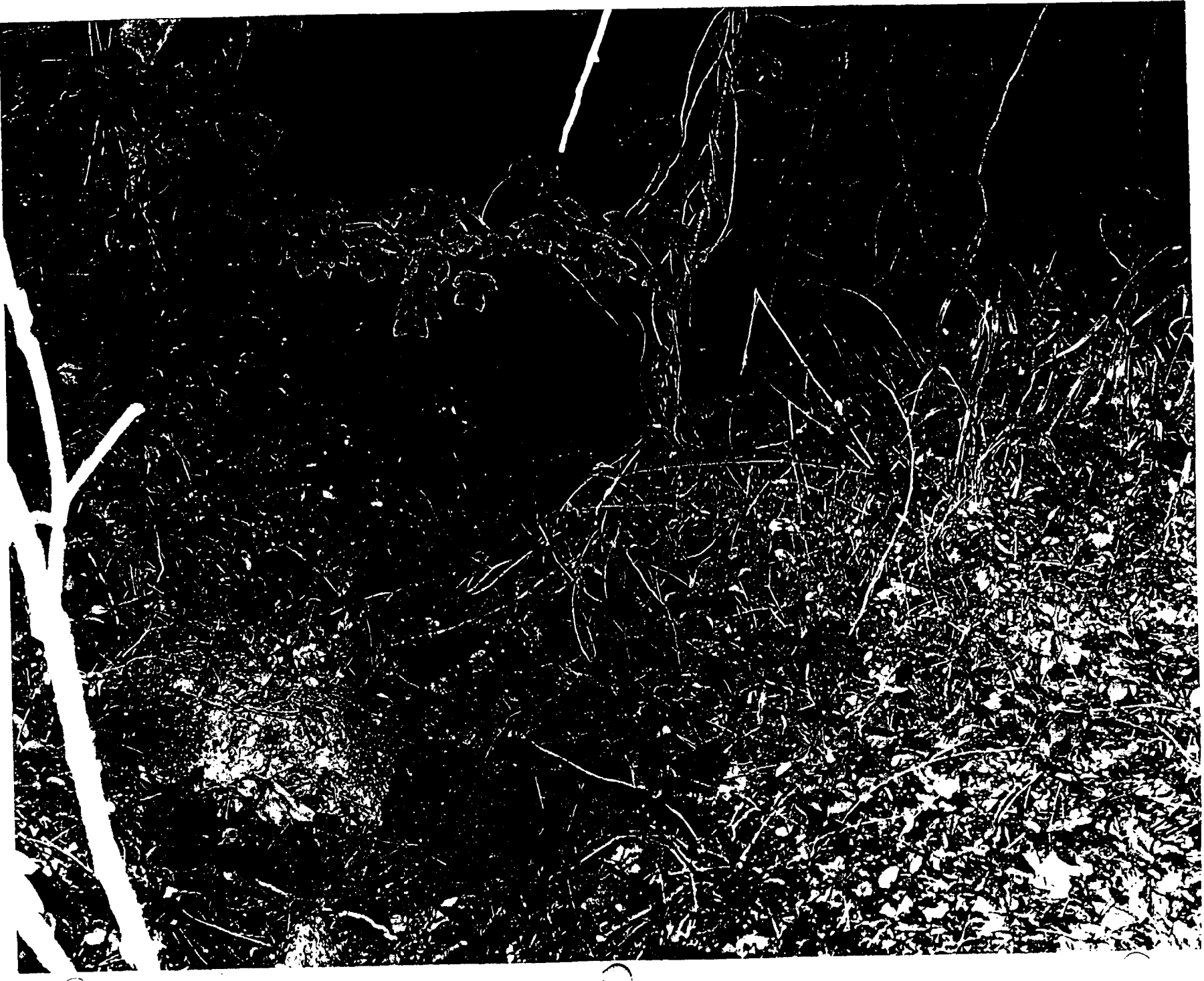
SITE 12
BARRACKS ROAD LANDFILL

SCALE: 1" = 300'





Site 12



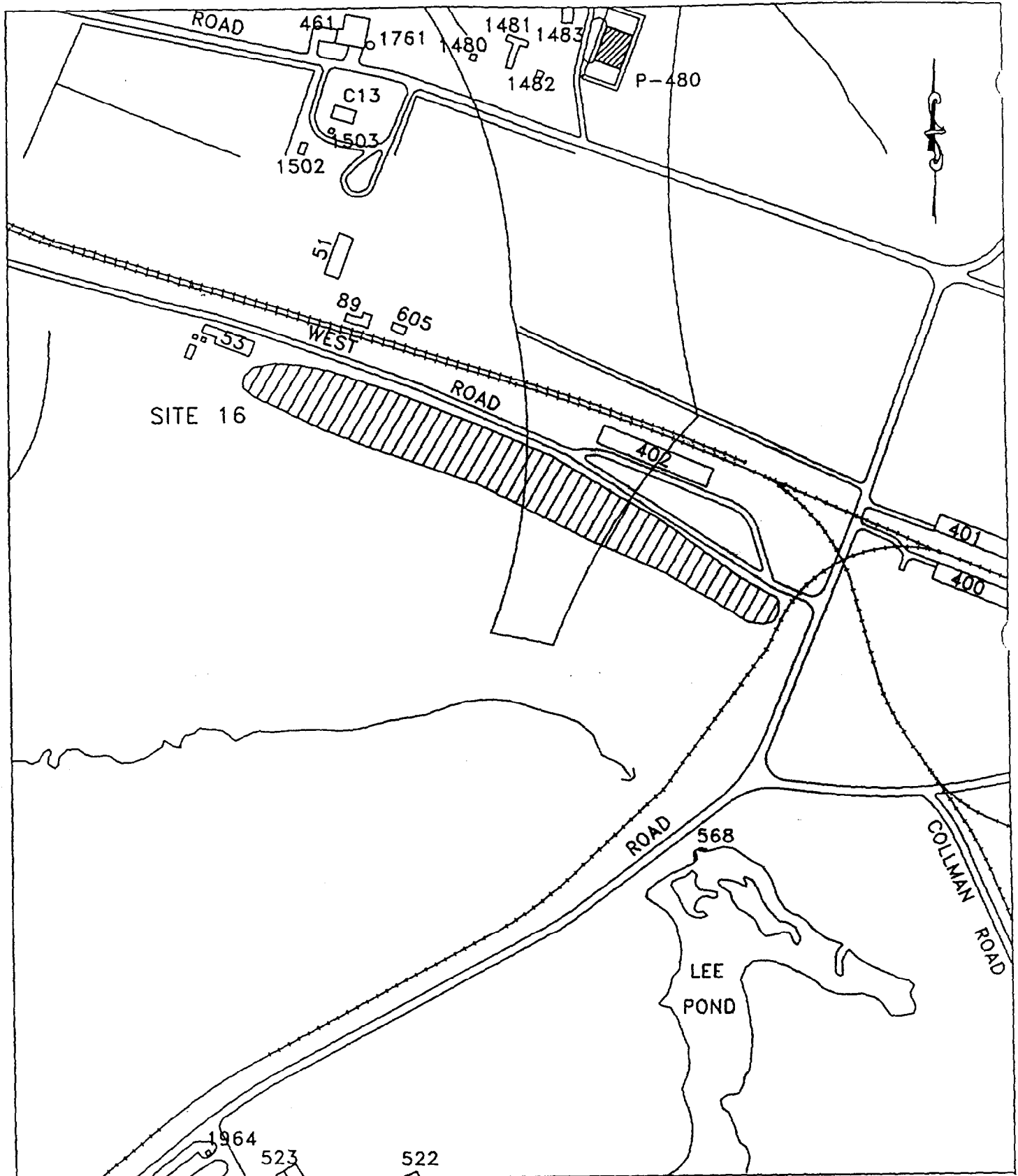
West Road Landfill**Site 16: West Road Landfill**

This site is approximately 300 feet wide and 1,200 feet long, adjacent to West Road near Indian Field Road. The 8-acre site was operated from the 1950s to the 1960s reportedly for disposal of dry cell carbon batteries, banding materials, pressure transmitting fluid (possibly PCBs), unknown chemicals and 55-gallon drums (contents unknown). Over 100 tons of waste are estimated to have been buried onsite. As with the other landfills, this landfill seems to have been created by filling a ravine.

A portion of a large scrap metal pile, reported to have reached two stories high, was possibly pushed into these woods for disposal several years ago. Field inspection notes a pile of scrap metal objects, including missile hardware. A pile of approximately 18 foot long twisted metal pipes, possibly containing asbestos, was noted. Thirty-gallon drums, rotting batteries, chemical bottles and miscellaneous electrical devices were also identified.

The landfill is situated upgradient of a marsh adjacent to a tributary leading to the eastern branch of Felgates Creek. Surface water flow is southwestward through gullies and into the wetlands along this tributary. The York River, from the point at Felgates Creek, is approximately two miles away. Groundwater flow is also to the southwest.

The first photograph is a closeup of the batteries found at the site while the next is a historic aerial photograph of the former scrap pile near the site. The landfill is in the woods at the top of the picture. The following photographs illustrate some of the wastes present: drums, scrap metal and batteries.



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SITE 16
WEST ROAD LANDFILL

SCALE: 1" = 300'



Site 16

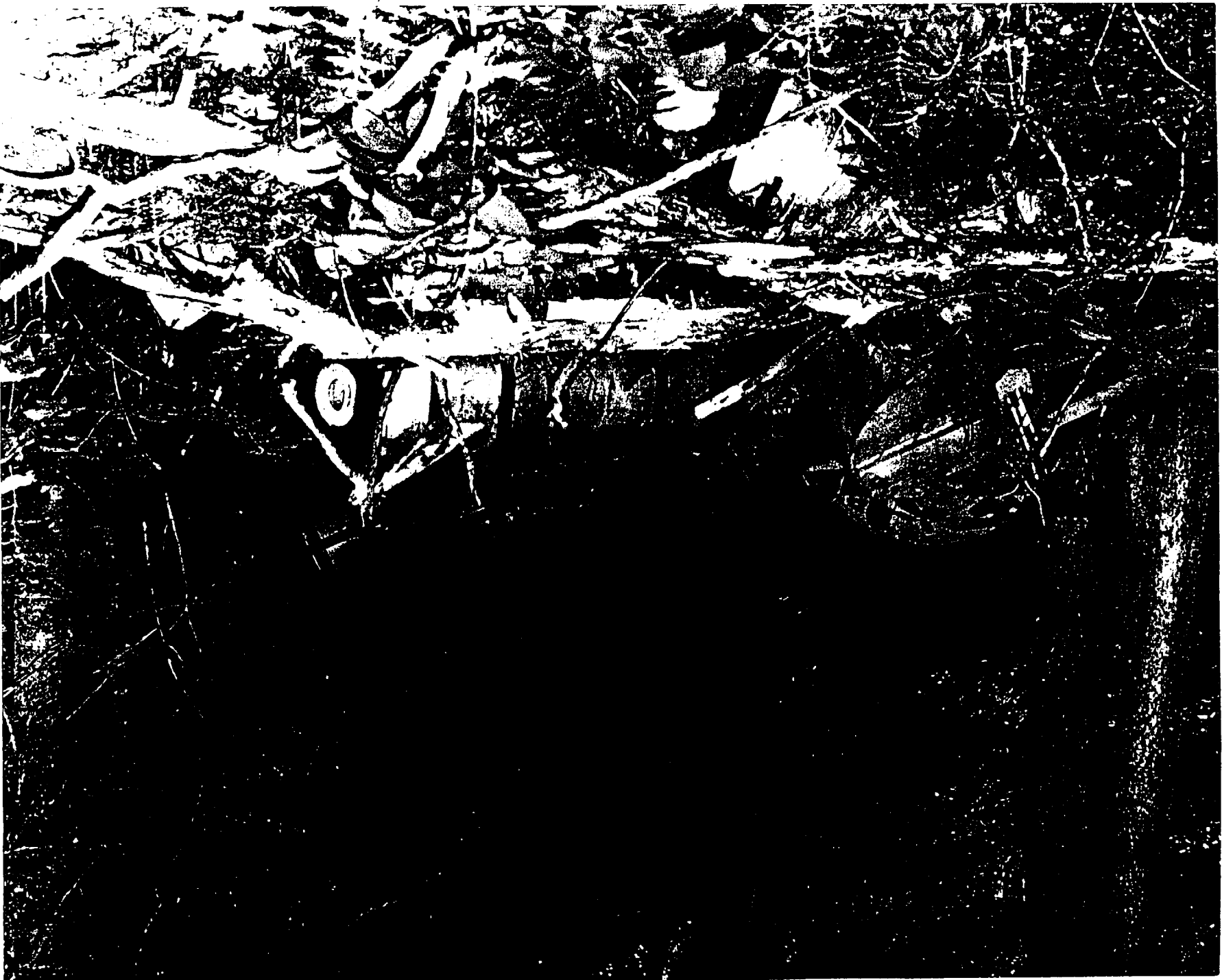
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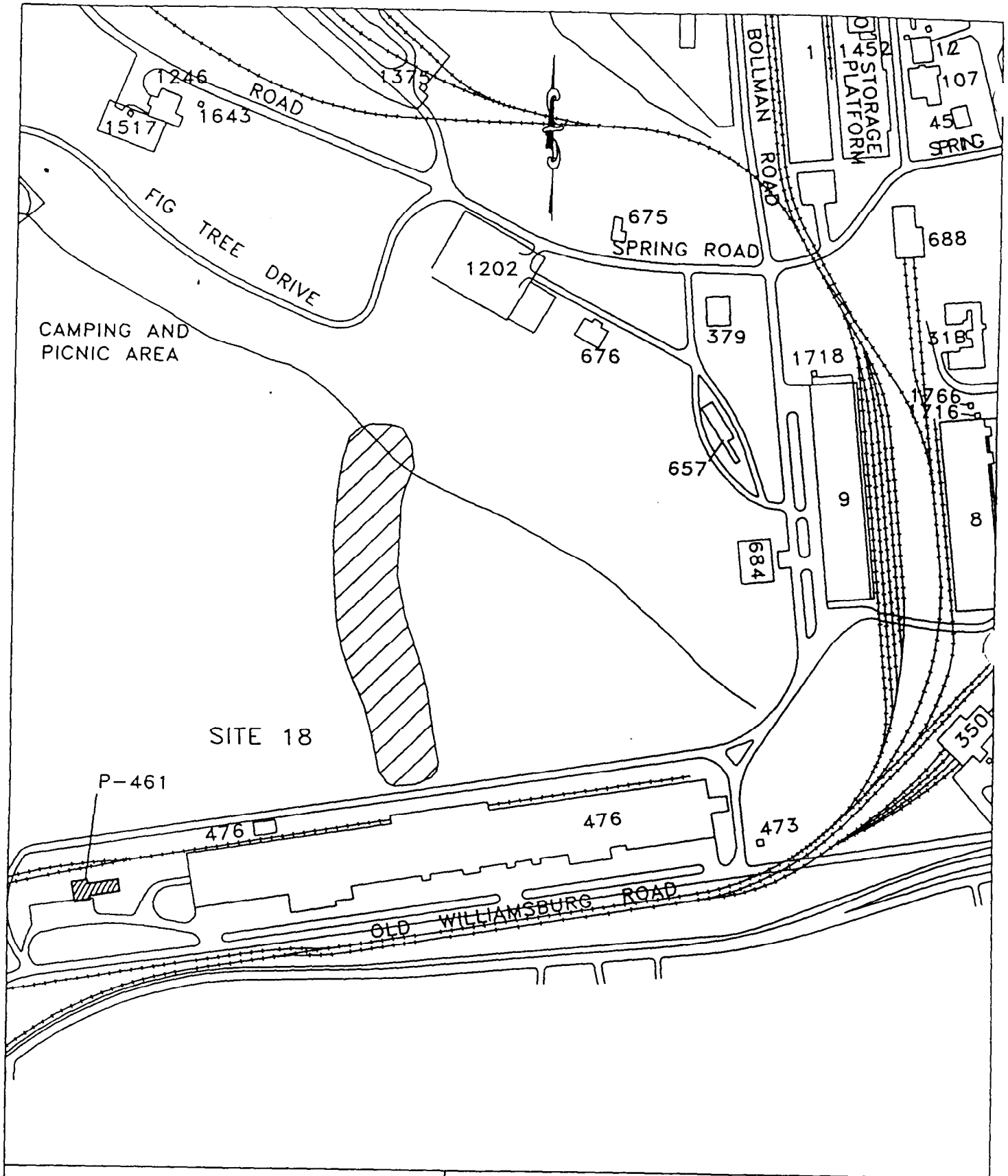
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Building 476 Discharge**Site 18: Building 476 Discharge**

Site 18 is an unlined drainage ditch north of Building 476 and adjacent to the road. The ditch received battery acid discharges from the 1940s through the 1960s. The acid waste discharged from this building is reported to have contained mercury, nickel, cadmium, and lead. It is estimated that approximately 100 to 200 pounds of metals may have been discharged to the ditch during its usage.

A 24-inch diameter drainage pipe at the head of the ditch was noted during the field inspection. It is thought to convey storm water collected from the parking lot of Building 476. The ditch had approximately four inches of water at its origin; it appears to meander naturally, becoming an intermittent stream that drains into Lee Pond. At its widest point noted, it was about 10 feet across and had approximately 4.5 feet of water.

The first aerial photograph locates the site in the woods along the right side of Building 476. The next picture is of the drainage pipe at the head of the ditch. The liquid is water, most likely from precipitation. The last shot is another aerial view, taken in the summer.



NAVAL WEAPONS STATION
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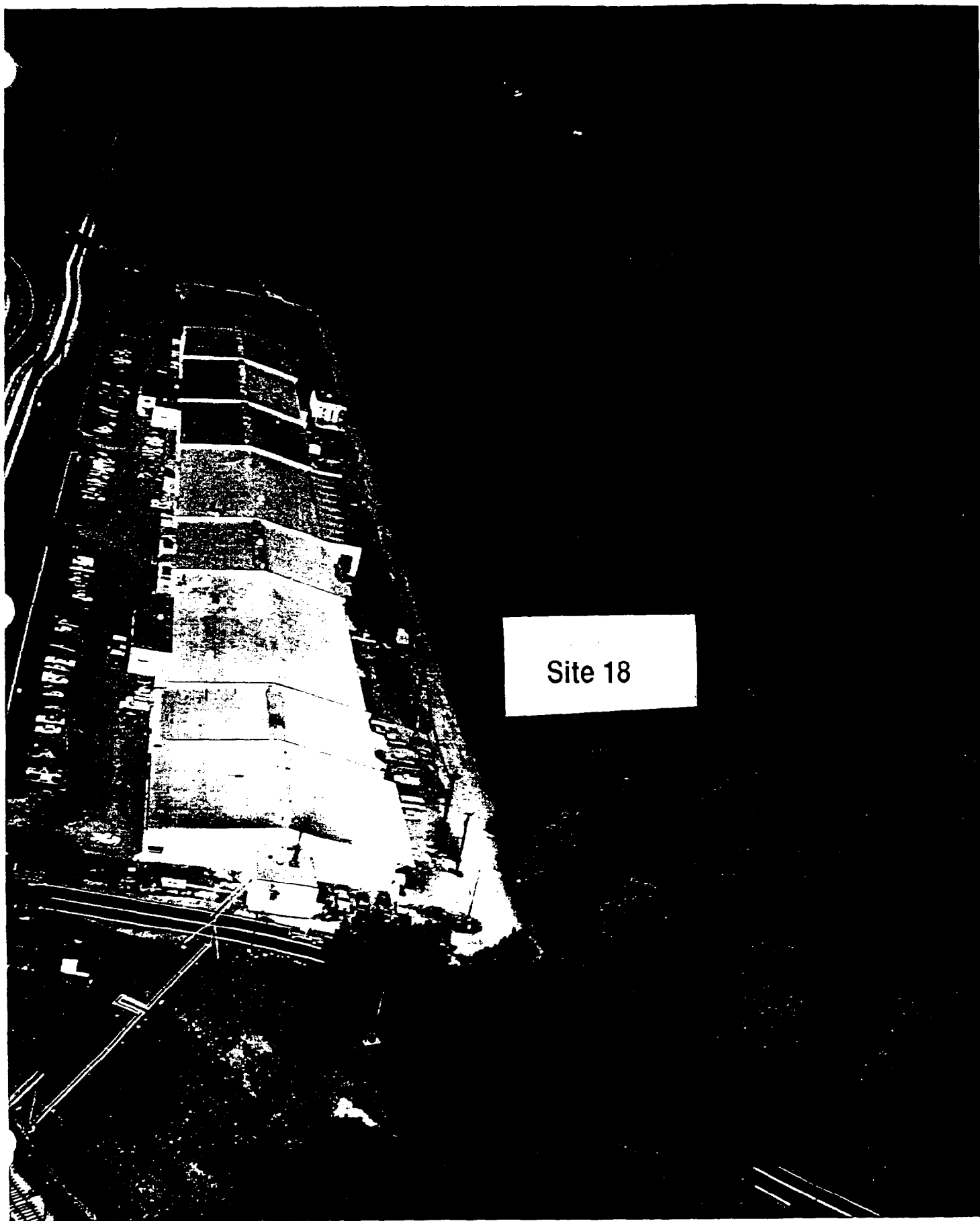
SITE 18
BUILDING 476 DISCHARGE

SCALE: 1" = 300'



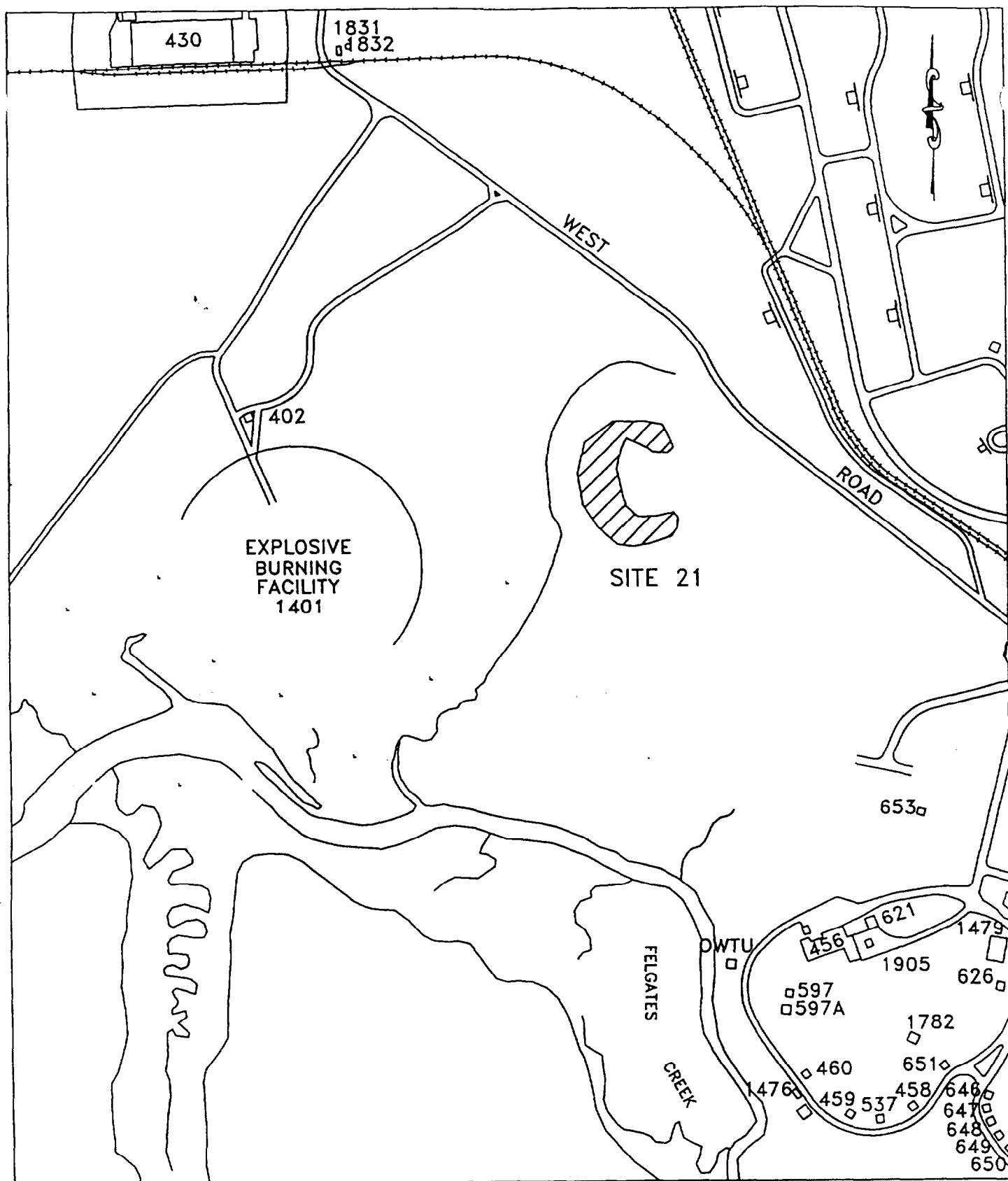
Site 18





Battery and Drum Disposal Area**Site 21: Battery and Drum Disposal Area**

Site 21 is a recent addition to the IRP. Currently, the site is undergoing a Preliminary Assessment/ Site Inspection. It is a former dump located in and adjacent to an intermittent stream valley. Material at the site was dumped randomly on a hillside that slopes to the stream. Observations of materials at the dump include: five and fifty-five-gallon drums; cans; cables and wires; rubber hoses; scrap pipe and timber; and decomposed military batteries. The first three photographs are closeups of the materials while the last is a general shot.



NAVAL WEAPONS STATION
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SITE 21
BATTERY AND DRUM DISPOSAL AREA

SCALE: 1" = 300'

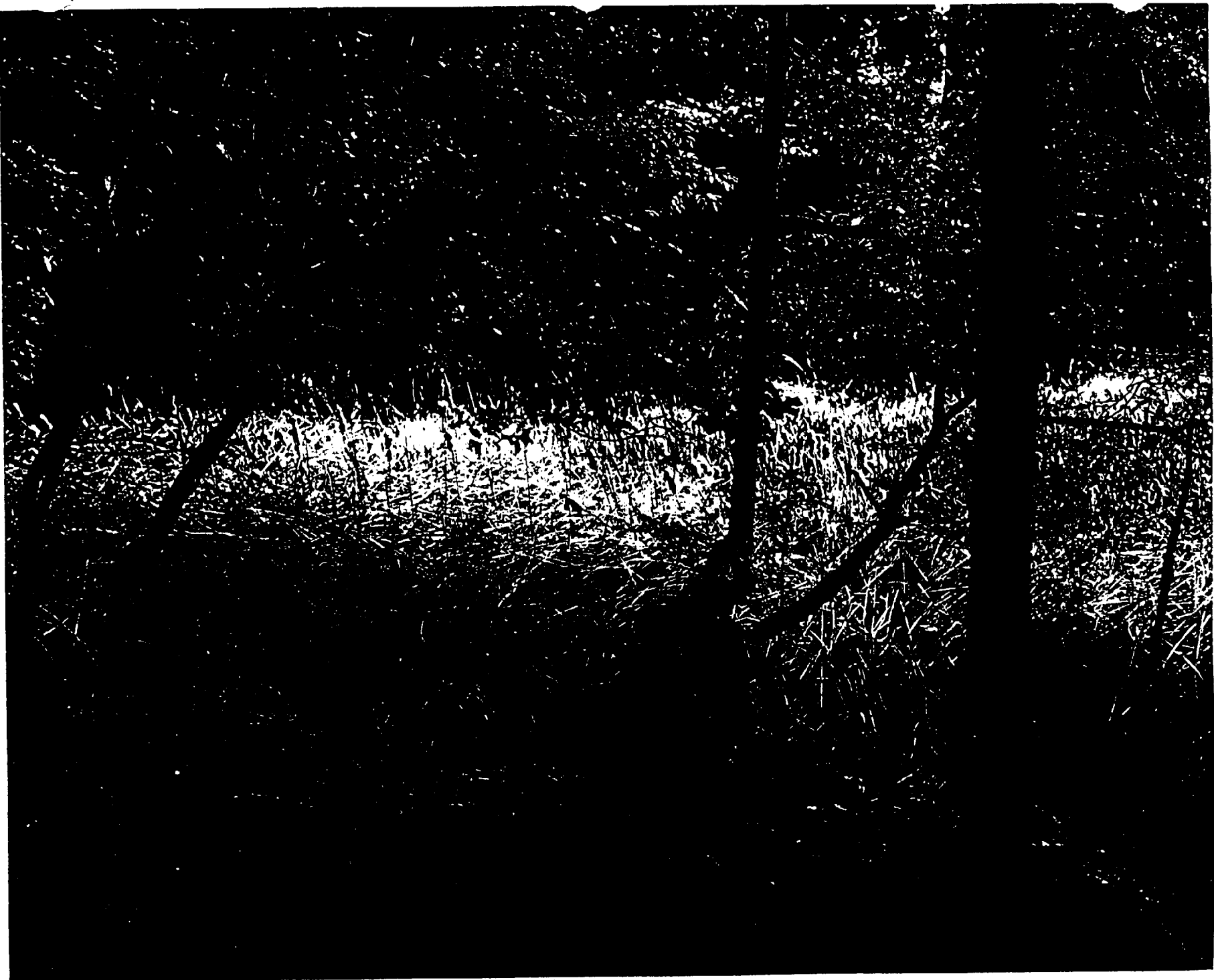




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